



We were promised flying cars and moon colonies. Instead we got idiots dancing on TikTok.

What went wrong? And how do we fix it?

But before we get there, let's just imagine a different timeline for a moment. What if things had gone very differently in the last 40 years?

First, think of all the incredible scientific and technological breakthroughs that came out of post-WWII America prior to 1970:

Nuclear power, satellites, the transistor, the Internet, television, water filters, cochlear implants, camera phones, cordless tools, information theory, moon rockets, scratch resistant lens, memory foam, freeze drying, solar cells, artificial limbs, and machine learning, to name just a few.

All of these technologies came out of the go-go techno optimism of the 1950s and 1960s. Many of them came out of the brilliant creative cauldron of Bell Labs, or from NASA trying to make sure astronauts and their equipment survived in unforgiving, cold, dark of space.

Now imagine many of them happening two or three decades earlier.

Even better, throw in all the technologies that almost came to pass that still haven't happened yet: supersonic travel, nuclear fusion, space travel, and nanotechnology.

They never came to pass because we never invested in them or cut off funding to them way too soon. But now imagine that we made those investments in the 1960s, 70s and 1980s. Instead of backing down, we went all out the way we did with [the human genome project](#) in the 1990s.

What would America look like now? What would the world look like?

Imagine an America powered by cheap, clean, nuclear energy and sweeping fields of solar cells with batteries, machine learning solving protein folding 20 years earlier and powering a medical revolution, permanent CRISPR cures for cystic fibrosis and sickle cell anemia, mRNA cures for breast and prostate cancer, travel from New York to Los Angeles in 30 minutes or from New York to Japan in two hours, nanotech robots that eat arterial plaque, robotic factories building everything from toys to advanced chips right here on our shores, and a grid of 6th or 7th gen Starlink satellites beaming down infiniband or even terabit per second speed internet across the globe so a top doctor in New York can perform life saving surgery via robot half way across the world in ultra-high definition VR with no lag.

What if we hadn't strangled housing development with zoning laws that made affordable housing functionally illegal so that it rapidly became impossible for the lawyer and the janitor to live near each in New York City or San Francisco? Instead of blue collar folks facing skyrocketing prices and forcing them to live an hour outside of the city and commute to work wasting time, money and energy, they'd live closer to work and walk there or hop on a quick train or bus.

What if we hadn't tangled up nuclear energy in endless environmental impact studies and approvals, and allowed anti-nuclear agitators and activists to raise objection after objection in courts, to that point that we didn't break ground on [a single new reactor between 1977 and 2013](#) and the first of them didn't go online until 2023 and two of the four were abandoned before completion?

Instead of rising temperatures and pollution, we'd have a [co2 emissions chart like France](#) across the developed world, which didn't turn its back on nuclear and kept building after the 1970s and now gets over 70% of its electricity from clean nuclear energy.

## Per capita CO<sub>2</sub> emissions

Carbon dioxide (CO<sub>2</sub>) emissions from fossil fuels and industry<sup>1</sup>. Land-use change is not included.



Data source: Global Carbon Budget (2024); Population based on various sources (2024)

OurWorldInData.org/co2-and-greenhouse-gas-emissions | CC BY

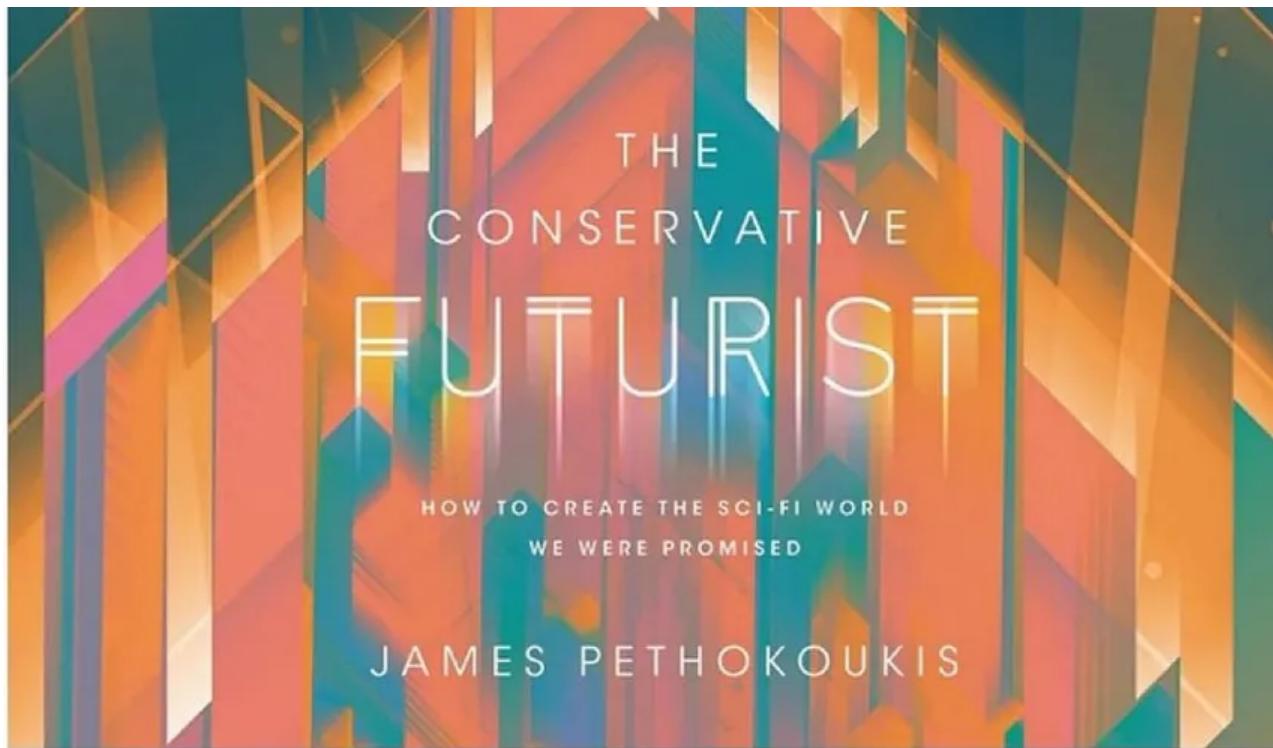
**1. Fossil emissions:** Fossil emissions measure the quantity of carbon dioxide (CO<sub>2</sub>) emitted from the burning of fossil fuels, and directly from industrial processes such as cement and steel production. Fossil CO<sub>2</sub> includes emissions from coal, oil, gas, flaring, cement, steel, and other industrial processes. Fossil emissions do not include land use change, deforestation, soils, or vegetation.



(Source: [Our World In Data](#))

As James Pethokukis puts it in [The Conservative Futurist](#),

"To put it another way: if regulation had remained at its 1949 level, GDP today would be more like \$75 trillion instead of a quarter of that. Imagine a U.S. economy nearly four times as big as the one today. Basically, we would have the U.S. economy of 2076 right now. Imagine median household pay of nearly \$300,000 a year versus \$70,000 currently."



### (The Conservative Futurist)

In short, we'd have the economy of the tricentennial today and sci-fi technologies at every level of society. We'd have the makings of a Star Trek society, filled with technologies we can barely imagine.

If all that had happened would we even be talking about climate damage? Would we have populist movements and spin-dictator authoritarians on the rise all over the world? Would the idea of degrowth even exist?

Unfortunately, that's not the America or the future we got.

We didn't get unlimited clean energy and flying cars and Mars bases, we got people screaming at each other on Twitter and algorithms that promote the most polarizing posts. "The best minds of my generation are thinking about how to make people click ads," said Jeff Hammerbacher.

Instead of supersonic travel, fully automated factories, wireless infiniband and a nuclear renaissance, we've got a Black Mirror America, both in its mentality and the way its society is facing the future. Instead of more housing and robotic factories, we got degrowth, doomerism in every walk of life, fear of the future, the precautionary principle, populism, and protectionist tariffs.

And instead of people seeing science and technology as a powerful transformative force that brings a better tomorrow for everyone, they see life through a warped lens.

As Louis Anslove writes in his fantastic article "[Black Mirror's pessimism porn](#) won't lead us to a better future":

"Each new innovation gets an allegory: smartphones as tools for a new age caste system, robot dogs as overzealous human hunters, drones as a murderous swarm, artificial intelligence as new age necromancy, virtual reality and brain chips as seizure-inducing nightmares, to name a few. Episodes most often channel our collective anxieties about the future – or foment new ones through masterly writing, directing, casting and acting."

"Black Mirror is more pessimism porn than Plato's parable, imparting to its audience a tacit lesson: fear the future more than the past. Fear too much technological change, not too little. It is an inherently populist narrative, one that appeals to nostalgia:

"Intellectually, we understand the present is better than the past in large part due to scientific and technological change, yet emotionally and instinctually we can't help but feel this time in history is different, that the future can only get worse."

# Black Mirror's pessimism porn won't lead us to a better future

## Louis Anslow

A new progressivism embracing construction over obstruction must find new allegories for technology and the future



While Black Mirror explores how humans react to technology, it too often does so in service of a dystopian narrative. Photograph: Nick Wall/Netflix



It seems no matter how much better science and technology make life we only see the future as getting worse in a strange kind of mass delusional hysteria that continually reinvents itself year after year. In years past everything from radios, to TV, to video games were rotting our brains and now its AI and social media. Tomorrow it will be AR glasses and whatever else we dream up.

Invent a better paperclip and someone, somewhere will be afraid of it and scream that it's the end of the world as we know it.

Progress has a massive ripple effect that benefits the whole world but we can't seem to see it anymore.

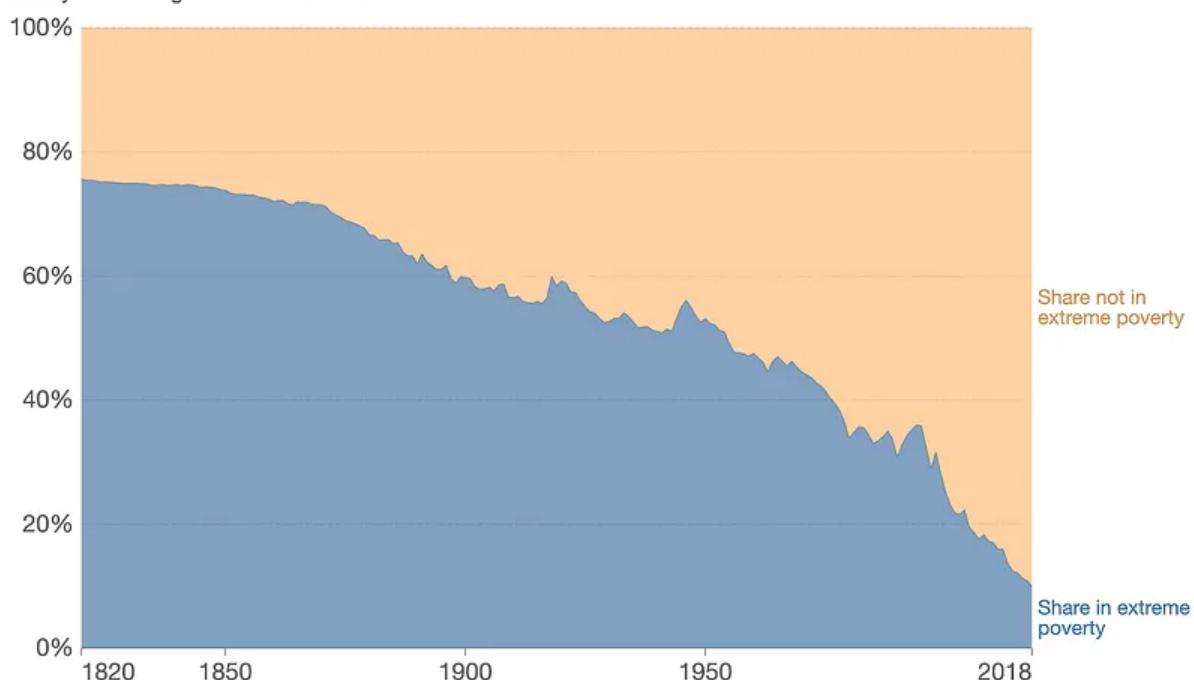
Don't believe life is better now than ever before in history? Just a quick look back at a few hundred years ago might change your mind.

Historian Michail Moatsos estimates that in 1820, just 200 years ago, almost 80% of the world lived in extreme poverty. That means people couldn't afford even the tiniest place to live or food that didn't leave them horribly malnourished. It means living on less than \$1.90 a day in 2011 prices and \$2.15 in 2017 prices. Actually you don't even need to go back that far. In the 1950s, half the world still lived in extreme poverty.

Today that number is 10%.

### Share of population living in extreme poverty, World, 1820 to 2018

This is calculated based on a 'cost of basic needs'-approach. It represents the share of the population that was unable to meet basic needs (including minimal nutrition and adequately heated shelter) according to prices of locally-available goods and services at the time.



Source: Moatsos (2021)

[OurWorldInData.org/extreme-poverty-in-brief](http://OurWorldInData.org/extreme-poverty-in-brief) • CC BY



Nearly *half* of all children used to die, in every country on Earth, into the late 1800s, when economies were slower and more stagnant and less open.

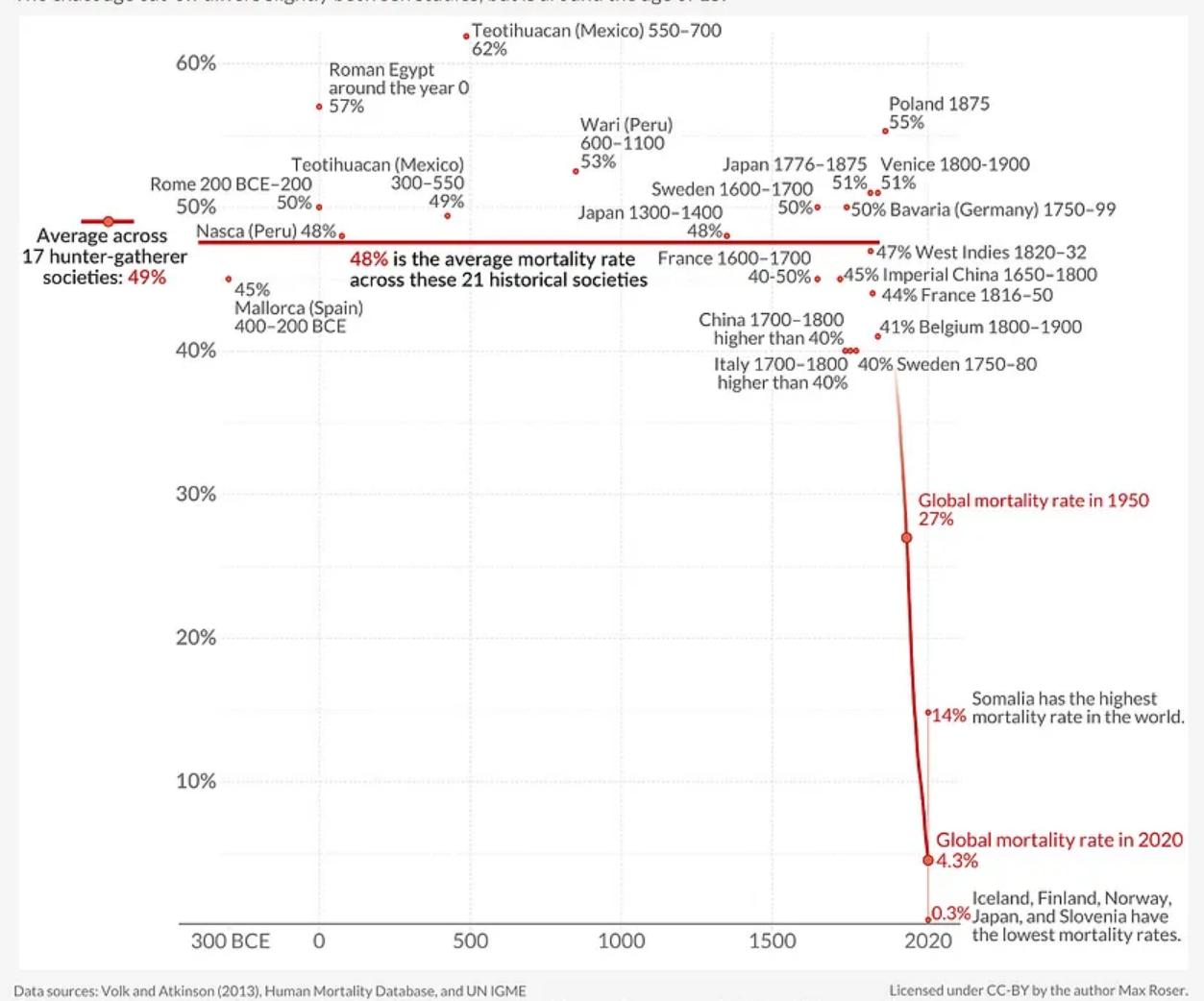
In most first world countries infant mortality is now single digits or a fraction of 1% and even in the developing world it's 4%. On a recent trip to Japan I rows of tiny statues with red bibs on them. I asked someone about them and learned they were Jizō statues and the bibs often symbolized children who'd died.



To see just how stark that drop is, take a look at this chart which shows child mortality over two millennia. You'll see that for most of human history it was a flat line of uninterrupted death and then it suddenly drops dramatically.

# The long-run history of child mortality

Shown is the share of children who died before reaching the end of puberty.  
The exact age cut-off differs slightly between studies, but is around the age of 15.



That's what progress does. It makes the whole world better. Each step builds on the last steps.

Once you have the ability to make clear glass you get eyeglasses. Once you get eyeglasses you get the microscope. A Dutch eyeglass maker saw his kids playing with two lens to magnify things and created that modern marvel of science. A fabric maker used it to look at fabrics and saw a whole world of tiny creatures we didn't know existed. Once you have an understanding of microbes, you get germ theory and the ability to fight them off.

Each layer of knowledge and tools enables the next level of knowledge and tools. When anyone can build on the past and abstract those lessons to new domains we get new breakthroughs and new ideas and new businesses. But when you stop making those tools or throw a wrench in that progress, the next level of technology stalls out too. You don't just impede the current technology, you break the great chain of creativity and stall out future technologies that would have been built on the last link in the chain.

When you read this article on your phone, you can thank the glass makers of Murano and the Corning folks who crafted super hard Gorilla Glass, along with the thousands of people who probed electricity through the years, from Benjamin Franklin, to Michael Faraday, to Nicola Tesla, to Edison, and all the invisible engineers and technicians whose names we don't know. You can thank the men of Bell Labs who gave us transistors and the Bell Labs offshoot company, Intel, who gave us the first powerful commercial microchips. You can thank the operating system pioneers and UI developers. And don't forget the thousands of factories all over Asia in a big, beautiful global supply chain, making smaller and more distinct parts, that feed larger factories that integrate those parts all down the line in over 100 countries. You can thank the massive container ships, the size of skyscrapers on their side, bringing you that phone from halfway across the world so it arrives at your door the day after you ordered it. You can thank the standardized metal box container with walls only three credit cards thick and floors that are antimicrobial, that protected the paper box with your phone as it travels from far away.

But we don't think about any of it. We pick up the phone, drive to the store, take the train to see our friends, eat in a bowl that doesn't crack, while looking up anything we want through our tiny magic window on the world. Tomorrow we'll just talk to the phone and have a brilliant built in assistant that knows exactly how to help us, like this demo of Project Astra from Google's recent conference.

Too often today, we find people who have a problem for every solution. Complaining is an international pastime. People scream on social media and gnash their teeth and they blame the media and rich people and the haves and the have-nots and corporations and politicians. But they don't offer solutions. They want to smash capitalism or kill all the lefties or crush all the conservatives but they don't have a better answer, just rage and delusion. To tackle the challenges of tomorrow, we need more thinkers and doers and inventors and less angry idiots.

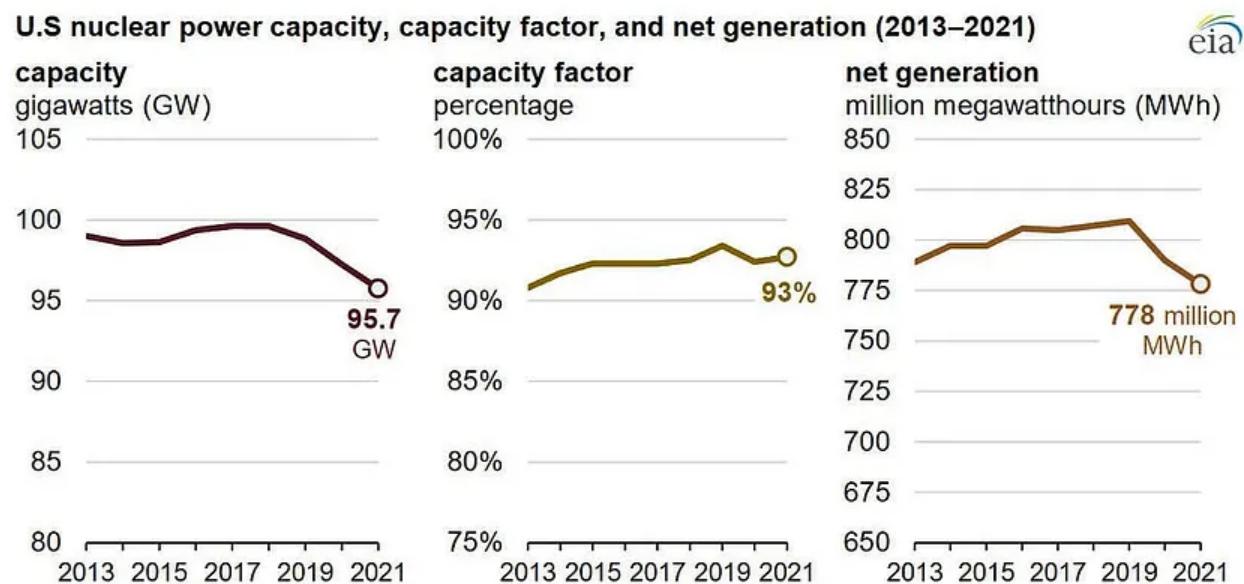
The world is the world that we make, through our discoveries and creations and inquisitiveness.

But today Americans and most of the world have forgotten it.

We now fear the future and when you fear the future it becomes a self fulfilling prophecy.

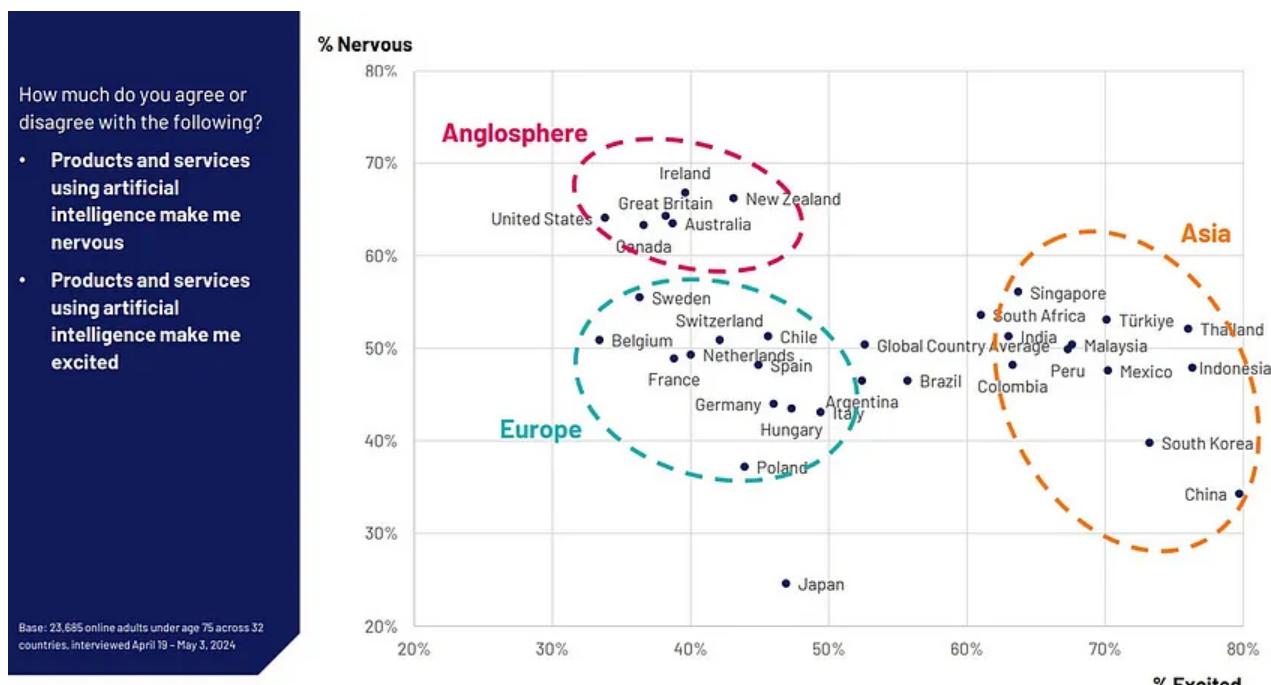
Meanwhile, countries like China are racing into tomorrow with open arms. They've greenlit 10 nuclear reactors this year alone. American nuclear capacity is actually going down because we're retiring old reactors and not building new ones, while China's is on the rise.

## U.S. nuclear electricity generation continues to decline as more reactors retire



(Source: U.S. Energy Information Administration)

Even worse, look at this chart about how people feel about AI on a country by country basis.



(Source: Ipsos)

Why are Americans afraid of the future when China embraces it?

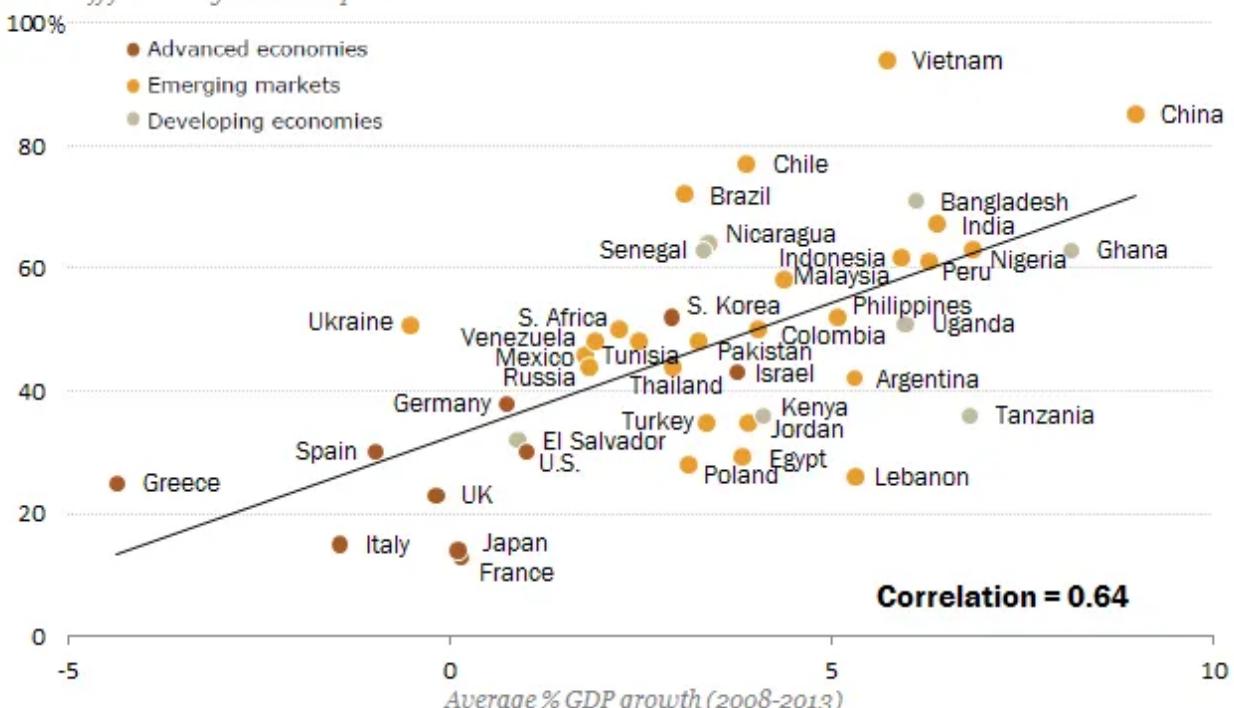
The answer is simple.

Growth.

When your country is growing, you're more optimistic about the future. When you're stagnating, you're fearful.

### GDP Growth and Optimism about Children's Future

*Percent who say today's children will be better off financially than their parents*



Source: Spring 2014 Global Attitudes survey. Q11. GDP annual growth from IMF World Economic Outlook Database, April 2014, accessed September 4, 2014. Data not available for Palestinian territories.

PEW RESEARCH CENTER



(Source: [Pew Research Center](#))

China has experienced massive, breakneck GDP and quality of life growth over the last 50 years, an astonishing transformation that few people in the west can even imagine (more on that in a minute).

Meanwhile, America has seen roughly 2% growth since the 1970s, with a brief surge to 3% in the mid-90s into the early 2000s with the Internet boom. That's essentially stagnation when you factor in inflation.

People often look back on the America of the 1950s and 1960s with longing and it really was a very different era. We experienced 4% growth in the 50s and 60s and it was a time of astonishing changes from rapidly built highways, to home appliances everywhere, to astonishing growth in car ownership, to a dramatic rise in affordable home ownership across the land.

Most people alive today never experienced it and grew up in a time of slower moving change and so they've given up hope that life can be better. They lived in a time of higher prices, starter homes that cost \$750,000, sudden layoffs and soaring grocery prices.

When you grow up in a time of stagnation, every disruption hurts and sets you back, whether that's COVID, inflation, the 2008 financial shock or massive layoffs. You're just trying to keep your head above water. It magnifies risks and makes them seem much bigger than your opportunities. The shocks hit harder because you have no cushion. You start to look at technology and progress as something that can take away what little you have left rather than something that can bring you a better life.

But if you lived in China over the last last 50 years you experienced something radically different.

In China today, their lives are dramatically better than their parents and their grandparents who lived through the horrors of Mao's China and the Cultural Revolution and the Great Leap Forward where hundreds of millions of people died. They've experienced a radical uptick in comfort, technology and security, the likes of which their parents couldn't even imagine in their wildest dreams. Soaring bridges, massive infrastructure scaling, new cities (they built over 500 new cities in the last 50 years many of which dwarf New York and London and Paris), new roads, 150,000 kms of train lines and 40,000 kms of bullet trains springing up from nothing while California spends 10s of billions and can't build a single bullet train for decades, direct electronic payments on their phones that skipped the step of plastic cards in between and so much more.

When you grow up in a fast moving, fast changing economy, if you lose your job, you just go work for the company that beat your company because business is scaling so rapidly, or you get a better job. The opportunities vastly outweigh the risks.

But in a slow moving economy, the risks seem to outweigh the rewards. It becomes a vicious cycle, where nobody dreams big anymore, nobody builds and nobody expects tomorrow to be better than today.

And that's what's happened to America.

We slowed down. We lost hope. We don't see a better tomorrow.

It's why today we don't have flying cars and clean nuclear reactors delivering emission free energy around the clock.

We have an America with a housing crunch where prices have gone up and up, where a young couple can't afford to buy an apartment or a car and start their working lives with 100s of thousands of dollars in debt if they went to college, where hard science innovations have largely stalled even as we saw a dramatic rise in computer and communication technologies during that brief spurt in the mid-90s to the early 2000s.

But even worse than all that, we have a growing chorus of doomsday prophets in everything from politics, to energy, to AI, with no solutions to our problems and who will only make things much, much worse if they succeed.

If we ever hope to turn it around, they must be stopped.

To build a better tomorrow we've got to start by smashing these insidious ideas before they poison more minds and spread like a nasty rot through the rest of society. Those ideas are a cluster of closely related ideologies, like degrowth, AI doomerism, anti-nuclear, and the precautionary principle.

Let's take a closer look at all of them and why they're bankrupt of any actual solutions but still seductively pull in so many with their potent cocktail of fear and apocalyptic visions like some kind of evangelical preacher sweating and screaming on stage as he looks to heavens and tells us fire and brimstone are coming if we don't repent.

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## Pessimist Porn and the American Decline Society

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The reason they must be stopped is simple:

Broken ideas and delusional thinking never fix anything. They make everything worse.

It's like those old long division problems in school where you got the first step wrong and all the rest of the steps are wrong now too. If you can't even start off in the right direction you have no hope to get where you're going.

As growth slows down in any society, delusional ideas take root like poison weeds in the popular consciousness and given enough time they start convincing more and more people that terrible plans can actually work in the real world. If those delusional ideas get enough traction they can send a society hurtling through a tipping point that sees a country go into rapid decline.

Degrowthers tell us that we just have to "scale down destructive and unnecessary forms of production," to cut down energy use dramatically, and stop buying things we love. They imagine us all going back to the pre-industrial agrarian "utopia" of the 1800s and then we'll all be happy and free, working the land, dirt under our fingers, eating organic

vegetables, the sun on our face. Never mind that, that was a time when half of all children died and that quality of life index was closer to Chad than Switzerland. Never let reality and facts get in a way of a good utopian vision.

AI doomers want to bring the Precautionary Principal from its home in Europe to America. The Precautionary Principal basically says "better safe than sorry." In other words, if you can't guarantee that there is no risk whatsoever you can't do something. If you can't guarantee that AI can never be used for anything bad then you can't make it. Of course, this is insane. It's a Catch 22. You can't prove anything is safe if you can't actually built it in the real world, or if research is so choked off that nobody is doing it at all.

We learn by doing. We get better by doing. We make things safer by making things in the real world.

We can't learn how to make a Boeing 787 Dreamliner safer by *not* building the Dreamliner. We have to build it and have a history of building earlier planes so we can learn from mistakes and failures. That's how things work in the real world and there's simply no way around it. You can't learn by *not* doing. You have to learn through experience.

Out of childish fantasy fears of AI rising up and killing us all these folks would rob us of DeepMind's billion protein fold database, the lightning fast development of the COVID mRNA vaccine, promising mRNA cures for skin cancer crafted by AI, already in trials, instantaneous machine translation when you're traveling to Japan or Italy or Peru and self-driving cars that are about 1000 times safer than human. 1.25 million people died in car wrecks every year. That's 3,287 deaths a day. Humans are terrible drivers. Even worse, more than 20-50 million more are injured or disabled.

But somehow AI is less safe?

It doesn't match reality in any way.

Beyond fears of AI itself, we have people screaming about how new datacenters for AI are "draining water supplies from the people who need them most," with scary pictures of dried river beds taken randomly from the internet that have nothing actually to do with those datacenters. We've got the same folks screaming about how datacenters are eating up too much energy in a criticism that borders on the farcical as datacenters account for a measly 1.5% of total energy use across the world and do useful things like make the Internet and their phones work so people can post their complaints about why datacenters are evil.

'A powerfully disruptive book for disrupted times'  
Kate Raworth, author of *Doughnut Economics*

# LESS ↓ ↓ ↓ IS ↑ ↑ ↑ MORE

## HOW DEGROWTH WILL SAVE THE WORLD

### Jason Hickel

'The most prominent proponent of  
the degrowth movement'

New York Times





We have people like Ralph Nadar still fighting nuclear after fifty years and countries like Germany turning off their power plants so they can buy more dirty energy from Russia to fill the air with smog.

On the populist right we have politicians telling us with a straight face that 10% and 50% rises in taxes, aka tariffs, will save us and not just make the lives of everyday, working people and small businesses hideously more expensive. Maybe they think we can solve the housing crisis and soaring grocery costs by making everything else *cost more too*.

On the left we have people dreaming of a left wing "populist renaissance" so they can counter the radical plans of the right wing populists with their own equally delusional and idiotic plans.

Our science fiction is almost all negative across the board. We went from the Jetsons and Star Trek in the 1960s, glittering, hopeful futures, to the dark, rainy dystopias of Blade Runner and Terminator where nothing works and it's all falling apart, or evil machines rise up to slaughter us all, or Black Mirror, where technology always has a hideous dark side and goes terribly wrong no matter what you do.

Instead of incredible scientists turned sci-fi authors and futurists like Isaac Asimov, we have futurists like David Wood, who instead of imaging a better future with powerful new technology that transforms our lives in wonderful new ways, is pushing extremist narratives like Elizer Yudkowsky's "AI will kill us all" and excited that it will be the "most important book of the year" and not the Population Bomb of its time.



# IF ANYONE BUILDS IT, EVERYONE DIES

WHY  
SUPERHUMAN AI  
WOULD  
KILL US ALL

ELIEZER  
YUDKOWSKY &  
NATE SOARES

01657-005

A Sierra Club-Ballantine Book

95¢

POPULATION CONTROL OR  
RACE TO OBLIVION?

# THE POPULATION BOMB

WHILE YOU ARE READING THESE WORDS  
FOUR PEOPLE WILL HAVE DIED FROM  
STARVATION. MOST OF THEM CHILDREN.



DR. PAUL R. EHRLICH

Foreword by David Brower—  
Executive Director, Sierra Club



In other words, we're depressed, delusional and in decline, while the barbarians are battering at the gates.

This poisonous, hateful, hopeless mentality has taken over too much of America and much of the western world. We look inward and see nothing but problems and we look to tomorrow and see nothing but bad things coming over the horizon. It's swept away the can-do, big risk taking and bold mentality that made America the most powerful country on Earth. It's made people believe they won't have a better tomorrow no matter what happens, as if tomorrow is not built by our choices.

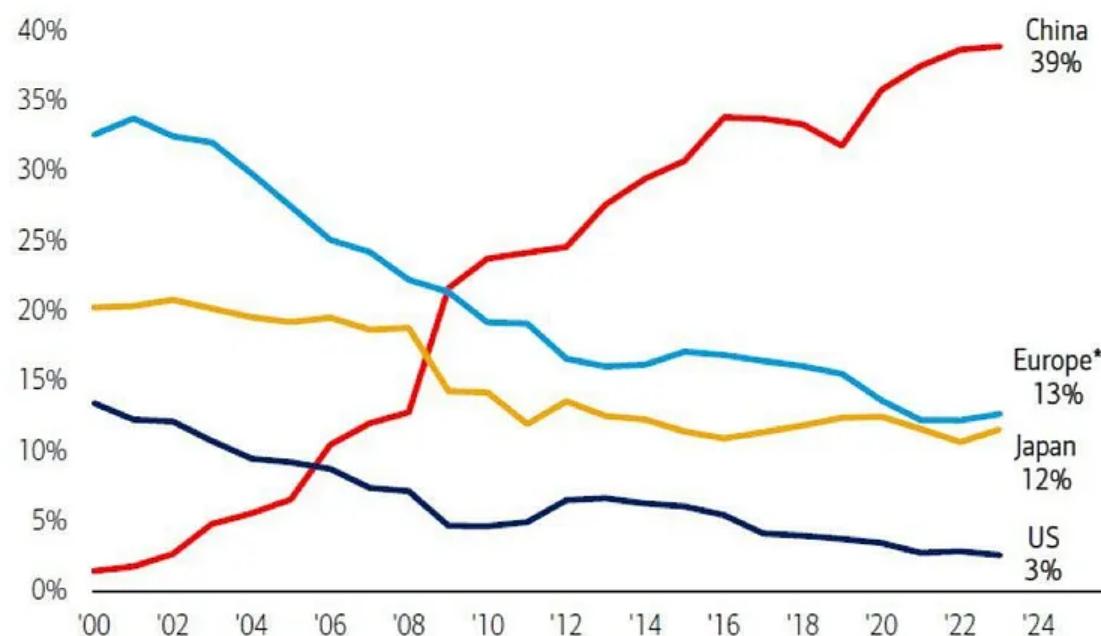
And it's happened at exactly the worst time, when China is on the rise. After the fall of the Soviet Union, we entered a world with America standing tall as the only true economic and military power on the planet. That world is gone. It's not going. It's gone. The Pax Americana is over. We already live in a multipolar world, with China the second biggest economy and soon to be the largest.

China now has the biggest car industry in the world. The largest fast food chain is no longer McDonald's, it's Mixue Bingcheng and it's Chinese, a company with zero restaurants in the US. 9 of the top 25 chains in the world are now Chinese. It has mega-cities, incredible infrastructure, multiple self driving car companies, the most dominant EVs in the world with 58% of the global supply, the biggest battery company on the planet

by a huge margin in CATL powering everything from cars to national electric grids to drones, the most advanced manufacturing in the world, drone food delivery and other sci-fi marvels. If your idea of China is a bunch of people on bicycles in Beijing, that world hasn't existed for decades. Now Chinese people drive motorbikes or take autonomous trains. They have more than 50 nuclear reactors planned. They're harnessing wind and solar *with* batteries.

### Chart 7: China car production share from 1% to 39% past 20 years

Global share of automotive car production by country/region



**Source:** Bloomberg, International Organization of Motor Vehicle Manufacturers. \*Europe 'Big 5' = Germany, Spain, France, Italy, UK.

BofA GLOBAL RESEARCH



(Source: BoFA Global Research)

They've gotten there with bold thinking and big risk taking. They've gotten there by doing what America once did best and did alone:

Building.

Dreaming big and building.

In other words, it's exactly the wrong time in our history for the American deceleration or "decel" mentality to take hold. It's a time when we need to lead on the world stage, not recede. It's a time when we need to innovate faster and build bold new technologies or we risk being overtaken by China and at worst ceding the future to them.

We won't stop China by trying to choke off their supply of AI chips. We won't beat them with tariffs and increasingly arduous chip controls and by blocking their cars from America. The rest of the world will happily buy those cars.

We can only win on the world stage the way we always have, by building a better mouse trap. Make things that people want and need. Do it better than everyone else.

In other words, compete.

To do that we've got to fix our mindset and know who the real enemies are:

Ourselves.

And to do that, we just have to remember who really makes the world.

## **Tomorrowland, Decay and Why Money Does Equal Happiness**

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So who makes the world?

If you trust the history books, it's generals and world leaders.

In school, our history books are filled with pages and pages of war mongers and villains and killers. We read about civil wars, and Stalin and Hitler and Mao, people who killed hundreds of millions of people and drove their societies to disasters.

These are the people we should forget, not the people we should remember. Destroyers. Murderers. Misery bringers.

The don't make the world, they fuck it up.

It's builders and inventors and entrepreneurs who really make the world. We stand on the shoulders of those giants.

The world we live in today is the result of countless breakthroughs and ideas made real by the people of the past. We tend to think of history as constant wars, punctuated by short stints of peace but it's actually the reverse, long periods of peace, punctuated by short periods of violence.

And in between all those wars and breakdowns, the people of the past were making the world you live in today.

Take something as simple as a teapot. You probably don't notice it. I didn't until one fateful Saturday breakfast where I suddenly stopped and stared at it.

It was as if I was seeing it for the very first time. Its smoothly curved and gleaming surface mesmerized me for a moment.

It glittered in the early morning light as my wife I drank our Earl Grey and talked about the world and about all the wonderful things we wanted to do on our day off. All the sound drained from the room and it was just me and the teapot for a few seconds that felt like minutes. We'd bought it while living in Berlin and carried it with us around the world. Inside, at the bottom, it's discolored, having taken on layer upon layer of thousands of pots of tea, but outside it's still flawless, true to its name, stainless steel.



We don't think about the thousands of years of trial and error that went into making stainless steel. It's just a part of our life, serving us faithfully, asking for nothing, never calling attention to itself. It's clean and shiny and feels nearly indestructible. The secret ingredient is chromium. It creates a special protective shield of chromium oxide when it mixes with carbon and iron atoms of steel. That give it that gleaming shine and its

invisible barrier against stains and rust. The chromium oxide keeps the ravages of moisture away from the powerful inner core of metal and carbon, deflecting stains like a kung-fu master deflects punches and kicks.

That stain blocking power is also why stainless steel replaced ceramic in sinks. Ceramic soaks up stains like paper soaks up ink, but that curved and sleek steel sink deflects everything from food, to bleach, to strawberry juice, to harsh chemicals, to ink, and more, never losing its shimmer.

Maybe you've noticed that your fork or spoon doesn't actually taste like anything? Go ahead. Put it in your mouth and see what it tastes like. Nothing, right? That's also because that magical chromium barrier. It keeps the metal from interacting with your saliva which corrodes steel by itself. As materials scientist Mark Miodownik writes in his amazing book *Stuff Matters*, it means "we're one of the first generations who haven't had to taste our cutlery."

Metals of the past soaked up all the little flavors from meals gone by, subtly distorting the flavors of everything over time, no matter how hard people scrubbed them.

But it's not just the material that matters.

It's the ingenuity and the genius that went into everything we see around us.

We live in a world where people before us solved countless problems so that we don't have to solve them. Every teapot, every window is a solved problem. Every smart phone, every car, every wooden floor, every steel and cement skyscraper, every refrigerator, every toaster, all those keys and locks, those closets you keep things in, the internet that wings these words to you around the world, the air conditioner keeping you cool, all those and a million more little things are *solved problems*. The people before us live on, infused into the very soul of the objects we touch and taste and walk on every second of our lives.

Layer, upon layer, upon layer of pre-baked solutions surround us every day. We don't notice them at all. They're just a part of the tapestry of our world. Every time we call someone on our phone, or get on a bus or a train, or drive somewhere, or put on clothes and shoes, or shove a delicious morsel of food into our mouth with a stainless steel fork, we're living off the genius and ingenuity of our ancestors.

And it's the builders that got us here. The scientists. The thinkers. The people who risked everything to start a company and grow it and bring that magical product to you. It's the builders that make life marvelous and that made America a super power and every other super power before it. The risk takers. The change makers.

We didn't get to be the most powerful country on Earth by strangling every new technology in red tape or by trying to make sure that nothing ever goes bad. We did it by growing. By taking risks. By exploring and experimenting and creating new and wondrous things that transformed the world around us.

A healthy society is a growing society. It's a society that creates new things in a constant stream. It's a society whose cities are getting larger and where more and more of that society's people have their needs and wants satisfied.

A society that's stagnating or shrinking is a sick society.

It seems simple and obvious but it's not obvious to many people. Builders have always had enemies and resistance but today, they're legion, a growing and powerful chorus of delusional people who fight progress and growth every step of the way.

Here's the opening paragraph of Less Is More: How Degrowth Will Save the World, by Jason Hickel, a degrowth bible:

"Perhaps it seemed like a good idea at the time: transfer land to big companies, rip up any hedges and trees and plant it all with a single crop, spray it from aeroplanes and harvest with giant combines. Beginning in the middle of the twentieth century, whole landscapes were remade according to the totalitarian logic of industrial profit, most of it for livestock feed, with the goal of maximising extraction. They called it the Green Revolution but, from the perspective of ecology, there was nothing 'green' about it. By reducing complex ecological systems to a single dimension, everything else became invisible. Nobody noticed what was happening to the insects and the birds. Or even to the soil itself."

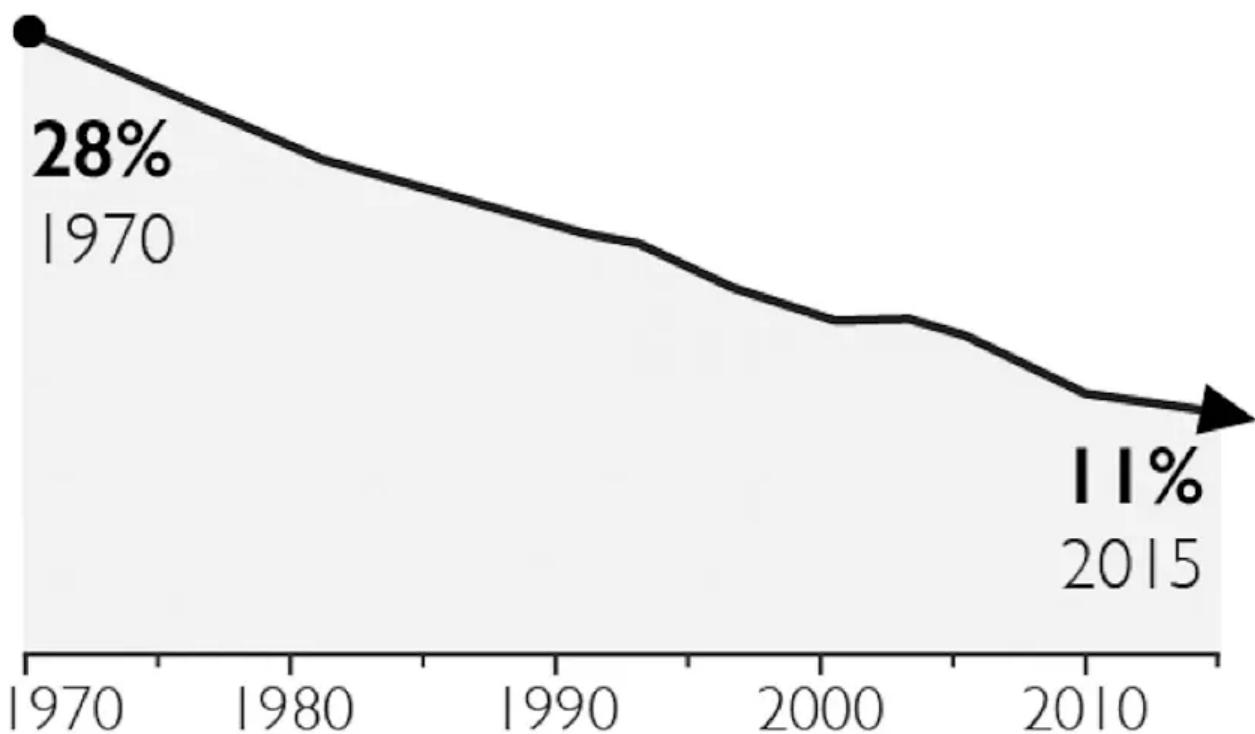
What he is talking about is the Green Revolution and what actually happened is it saved *billions* of lives and earned its creators the Noble prize. What was "lost" was mass starvation and famine.

That was back when the 1968 book, The Population Bomb, predicted that we'd have no choice but to let 2 *billion* people starve because there just weren't enough resources to go around. Mostly we'd just let everyone in Africa and the Middle East and most of China die and there was absolutely nothing we could do about it.

Instead we got the Green Revolution and malnourishment is at all time lows across the world.

# HUNGER

Share of people undernourished



Source: Gapminder[18] based on FAO[1,3]



(Source: [Gapminder](#))

The green revolution was a revolution in farming techniques, from cross breeding resilient plants, to pest control, to soil sustainability.

It marked the [Third Agricultural Revolution](#), where we saw massively increased crop yields and agricultural production across the world. In the late 1960s, as Professor Ehrlich was penning the Population bomb, farmers and scientists were getting to work, using fertilizers, high yield wheat and rice, pesticides and irrigation.

Norman Borlaug, the "Father of the Green Revolution", received the Noble Peace Prize in 1970. Yuan Longping did the same for rice, saving as many or more people in Asia.

And yet degrowthers describe one of the most import scientific revolutions in history as a *failure*.

While there is something in Hinkle's appeal for more diversified crops, and planting a garden in your backyard, the truth is that's for rich people in California who can afford to eat vegetables from small, local farms that are five times as expensive that don't have high enough yields to feed a hungry planet. The rest of the people on the planet have to

eat too. Meanwhile saying "lets have less people" is basically on par with supervillain Thanos' "they call me a madman" speech in the Avengers who wanted to snap his fingers to wipe out half of life in the Universe as a kind of aggressive population control.

Super pessimists like Ehrlich are still an unrepentant pessimists to this day. In a 2020 interview, he said "There are too many super-consumers on the planet." It seems cognitive dissonance has little effect on the man, even at 88 years old as he was during the time of the interview. Organizations like the World Clock still push the population bomb idea but now conflate it with fears of rabid capitalist overconsumption exhausting all the resources on the planet.

Doomerism never dies, it just changes its talking points.

Even worse, the doomers are wrong again. A second Green Revolution is on the horizon in China right now.

As Pethokoukis writes in the Conservative Futurist "Chinese scientists report that by giving 'a Chinese rice variety a second copy of one of its own genes, researchers have boosted its yield by up to 40 percent,' according to Science [magazine]. Researchers at the Innovative Genomics Institute estimate that CRISPR gene-editing technology could improve plant photosynthesis between 25 percent and 50 percent. No doubt the starvation countdown clocks will continue counting down no matter what other green shoots of agricultural progress emerge."

Or as authors Ezra Klein and Derek Thompson write in their fantastic book Abundance:

"To the extent that degrowth has a specific climate plan, it is to shut off or scale down areas of production it deems destructive, like military investment, meat and dairy production, advertising, and fast fashion..."

"We know what it looks like when governments face the political fury of rising energy prices or fuel rationing. In 2022, ninety countries and territories experienced often violent protests over the rising price of fuel between January and September, according to a BBC analysis. In Sri Lanka—a country that Hickel holds out as a model for degrowth development—those protests led to the collapse of the ruling government."

When you slow down, you don't get shiny, happy people, working the land with smiles on their faces, you get food and fuel riots or famine.

# Abundance

## How We Build a Better Future

### Ezra Klein and Derek Thompson



Bestselling authors of *Why We're Polarized* and *Hit Makers*



## (Abundance)

Despite all the evidence that happy societies are rich, growing societies, that hasn't stopped a whole host of people throughout history from seeing growth as a disease that needs to be stopped by any means necessary.

We've already seen a backlash to the Abundance movement on the left as some folks dream of a "populist renaissance" to match the populism push on the right, as blogger Noah Smith wrote recently:

"In a recent discussion, Klein pressed two of his progressive critics — Zephyr Teachout and Saikat Chakrabarti — to tell him what concrete problems they think an antimonopoly movement would solve. Again and again, Teachout's answer is "power":

It's a democracy vision...I think for 40 years...we basically stopped asking the power question...[B]oth Republicans and Democrats got on board with...this idea that we should just focus on outputs and not on power. So that's part of the reason you hear some resistance from the antimonopolists to your [abundance] vision.

"Here we see the fundamentally different goals of abundance liberalism and anticorporate progressivism. Abundance liberals care about *what stuff people get*, while anticorporate progressives care about *who holds power in society*. The progressives have trouble explaining exactly how changing the distribution of power would lead to better material outcomes for the masses, but that doesn't phase them much; to them, reducing corporate power is an end in and of itself."

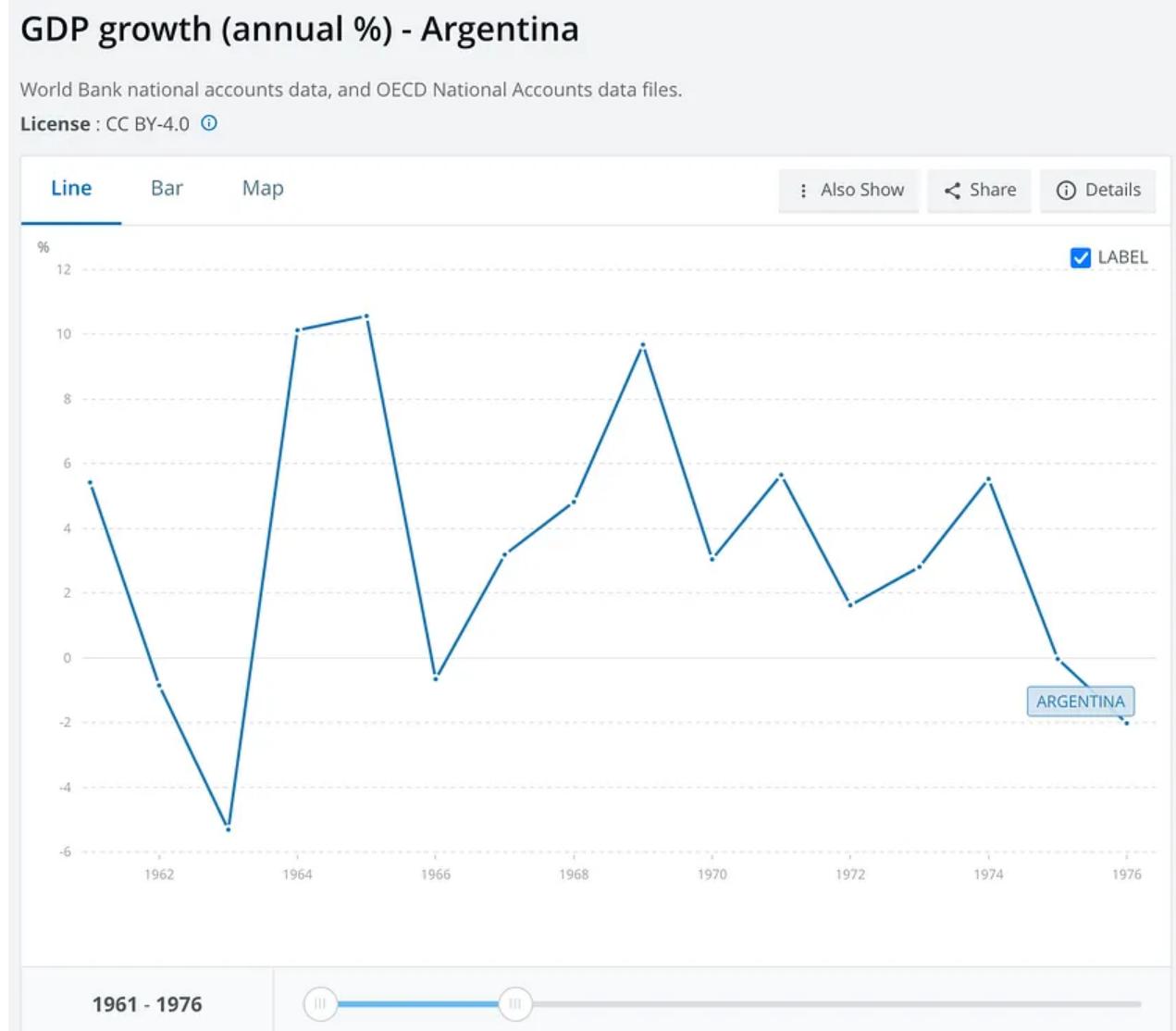
Noah goes on:

"As I've noted before, this ideas smacks of class resentment — a professional class that cares more about dunking on the entrepreneurial class than about helping the working class. That's why critics of *Abundance*, like Aaron Regunburg, tend to focus so strongly on accusations that abundance liberalism is being secretly supported by class enemies:

Our concern is that corporate-aligned interests are using abundance to head off the Democratic Party's long-delayed and desperately needed return to economic populism...[W]ho are the villains we should be naming? A growing number of Democrats are coalescing around a simple answer to that question: oligarchy... [M]any Democratic elites still oppose any attempts to identify billionaires and corporations as villains...[T]hey are terrified of the prospect of a populist takeover of a party...that has for decades served as a comfortable partner to oligarchy..."

They're right to be terrified of that takeover because it's an ideology bankrupt of any actual solutions. Essentially the response of degrowthers to "let's have a richer, more prosperous, more stable, more green society by building and cutting back overzealous legislation" is "we don't like billionaires and they're evil," a kind of American Black Mirror of Maoist ideas.

Let's be clear, there is no "populist renaissance." Those two words are an oxymoron. Populism and class warfare politics has never made any country richer, or solved any actual problems in the real world. At its best it tanks economies with nonsensical and unsupported economics "theories" and wishful thinking. See Peronism in Argentina, which a healthy dose of Milei libertarianism is fixing finally after decades of stagnation and wild swings from positive to negative GDP.



(GDP in Peron times)

At its worst extremes it's resulted in lots and lots of people dying:

The Great Leap Forward was supposed to make China an industrial powerhouse and instead destroyed agriculture and saw roughly 50 million Chinese die from famine and starvation. The Four Pests Campaign saw Chinese people attacking the "four pests" that killed crops, including Sparrows. Chinese peasants banged drums and pots and made loud noises so the birds couldn't land and died of exhaustion. When the actual parasites started eating the crops, there were no sparrows to eat them and the wave of mass crop

failures accelerate the starvation of millions. Horrible ideas lead to horrible results like beads on a string. One naturally follows the other if these ideas are allowed to play out in reality.



(Source: A Chinese propaganda poster from the Mao era, showing the exact *opposite* of how it turned out with the Great Leap Forward)

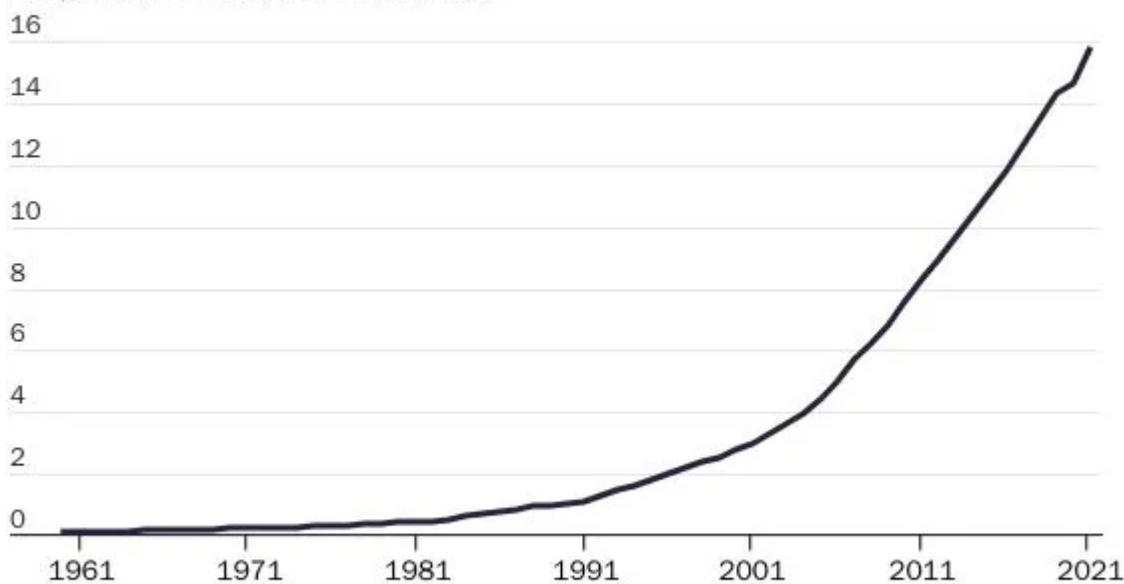
China only became the modern marvel China of today after the death of Mao and the actual renaissance of Deng Xiaoping's Reform and Opening Up market reforms. In short, they embraced capitalism and markets and ended class warfare. Today China is second largest economy in the world and on its way to becoming the largest and they did it by doing a 180 and building.

The chart below tells the entire story. See if you can spot the moment when China started to make market reforms.

Figure 1

**China's shift from state-led development to marketization led to rapid economic growth**

GDP, trillions of constant 2015 US dollars



Source: "GDP (Constant 2015 US\$)," World Bank, updated May 10, 2023.

Note: GDP = gross domestic product.



(Source: [the Cato institute](#))

We're not solving any climate problems because you turned off your LED lamp for a half hour more or decided not to shower every day. In that case, you've successfully increased the discomfort of your spouse and co-workers, but you definitely have not prevented a climate apocalypse by raising your stink level and reading in the dark.

Big climate shifts will be fixed by technology, by a boom in clean energy, that's already underfoot with wind, solar and geothermal but needs to embrace nuclear with open arms.

You also don't get there by making society poorer.

Poor societies don't spend any time talking about how they can save the environment or raise living standards or "pause AI" because they can't. When you're stuck at the bottom of Maslow's Hierarchy of Needs and just trying to put food on the table and find clean water, you don't get to worry about fantasies of AI superintelligence run amok.

The truth is more money does make us happier.

When you get to choose where you work instead of taking the only jobs available, that's a better life for you and your family. When you get to argue at the dinner table about politics, it's because you have food on the table in the first place. When you get to complain on the internet about rabid consumerism and the evils of technology, you have

that choice because of the datacenters that power your choice to complain and the existence of the very social media you despise letting you post about how much you hate social media.

In a fantastic scene in [the Aviator](#), Howard Hughes loses patience listening to a rich family saying "oh we don't care about money" and says "[that's because you've always had it](#)." When you've lived in a rich society that your ancestors created and known nothing but peace because your wars are fought on TV by remote control and drone strikes, you get to complain about "rabid industrialism" and "super consumers" and other made up nonsense.

When we have a rapidly growing economy the benefits ripple across society. We get not only positive first order effects but second order effects too. People are richer, healthier, they've got more opportunities to improve their lot and their children's lot in life, and then politics and trade become much more stable.

[The Killingsworth study](#) out of the University of Pennsylvania in 2021, "found that happiness rose steadily with income well beyond \$75,000, without evidence of a plateau."

"In the simplest terms, this suggests that for most people larger incomes are associated with greater happiness," says Killingsworth, a senior fellow at Penn's [Wharton School](#) and lead paper author. "The exception is people who are financially well-off but unhappy. For instance, if you're rich and miserable, more money won't help. For everyone else, more money was associated with higher happiness to somewhat varying degrees."

In other words if you're already a miserable person who's constantly unhappy anyway, more money won't make you happier. But for the rest of us, a growing economy, and economic dynamism are the keys to a longer, happier, healthier life.

Money means more happiness for a few simple reasons. One of the best is that it's a kind of frozen possibility that buys you options.

Take this simple example: A moderately upper middle class friend told me that while hiking on the Camino de Santiago recently, he was exhausted after 10 days and decided to spring for a single room, instead of a room with 4 to 10 people, as many pilgrims do to save money on the trip. That left him refreshed and ready to go again the next day as he'd finally recovered from the punishing toll the hike took on his body. But fellow pilgrims he met along the way weren't doing so well after a similar amount of days. They were sleeping in rooms with lots of people snoring and making noise and so their sleep was light or non-existent and that meant their bodies didn't have a chance to properly recover. One of them fell and broke her leg because she was so exhausted. Money bought him the possibility of better sleep and better sleep translated into a better experience the next day.

It's seems money can buy happiness or as Janis Joplin once said, "money can't buy happiness but it can buy a big old pink Cadillac to drive around looking for it."

In the book [How Economics Explains the World](#), author Andrew Leigh writes about what it means for society to get better at producing more with less for everyone:

"In prehistoric times, the only source of artificial light was a wood fire. To produce as much light as a regular household lightbulb now gives off in an hour would have taken our prehistoric ancestors fifty-eight hours of foraging for timber.

"By Babylonian times, the best lighting technology was a lamp that burned sesame oil. To produce the same amount of light, a Babylonian worker in around 1750 BCE would have had to work for forty-one hours. An earthenware lamp, which used a cotton wick and oil or ghee.

"Then came candles. Initially made from animal fat, they were time-consuming to produce (and smelt awful). Even in the late 1700s, the typical worker would have to devote five hours' work to producing candles that emitted as much light as a regular household lightbulb gives off in an hour.

"Through the 1800s came developments in gas lamps, which reduced the time cost of an hour of light to a few hours of work. With the invention of the electric bulb, light got cheaper still. By the early 1900s, it took just minutes of work to buy an hour of light.

"Today, less than one second of work will earn you enough money to run a modern household lightbulb for an hour.

"Measured in terms of artificial light, the earnings from work are 300,000 times higher today than they were in prehistoric times, and 30,000 times higher than they were in 1800. Where our ancient ancestors once toiled to brighten their nights, we rarely even think about the cost as we flick on a light."

ANDREW LEIGH

# How Economics Explains the World



A Short History of Humanity



Or as James Pethokoukis writes: "The benefits of economic growth, driven by technological progress, are myriad. Growth raises living standards, makes us healthier, and creates a more interesting world of greater fairness, tolerance, and opportunity. Even during the ongoing Great Downshift, Americans are better off than they used to be across all those metrics...And globally, the decline in extreme poverty has been nothing short of miraculous thanks to faster growth enabled by tech progress—including global communication and the standardized shipping container—especially in Asia. Yet as important as all those things are, and as important as future advances might be, we shouldn't ignore the most important benefit of all: an Up Wing society is one capable of solving big problems, even if those problems are unforeseen or poorly prepared for. An Up Wing society is a more resilient society."

What does he mean by a resilient society? A society with extra wealth and resources is a society that can turn on a dime and adapt to rapid and evolving threats quickly. A poor society that's just trying to figure out how to feed its population and keep bandits from robbing people in the street has no energy and resources left over to join together to fight something bigger.

Look at the COVID pandemic. America started off incredibly ill prepared for the pandemic. Article after article told us how we'd become beggars in the richest society on Earth, begging for more medicines, more masks and more ventilators. Old anti-virus technology took years, if not decades to produce vaccines. mRNA was a moonshot technology, still in its infancy and it was Operation Warp Speed, under president Trump, where it accelerated to incredible new heights. We developed, tested and delivered a vaccine at scale in under year, achieving 40% coverage faster by an order of magnitude than during any other outbreak in history.

The fantastic movie Contagion proved terrifyingly accurate about lockdowns, panic buying and the rapid and wild spread of misinformation and anti-science influencers.

But what it failed to predict was progress.

If COVID had happened during the time the movie came out, in 2011, only a decade earlier, it would've proved accurate on the time it took to come up with a vaccine through trial and error because Moderna was just a twinkle in its founders eye. But because medical technology had advanced we were able to prevent a massive amount of serious sickness and death. The National Library of Medicine puts the numbers in stark relief [here](#):

"Based on reported COVID-19 deaths, vaccinations prevented an estimated 14.4 million deaths (95% credible interval [CrI] 13.7–15.9) from COVID-19 in a year. However, if excess deaths were used, this estimate rose to 19.8 million (95% CrI 19.1–20.4) deaths prevented, equating to a global reduction of 63% in total deaths (19.8 million of 31.4 million) during the first year of COVID-19 vaccination."

Progress is what degrowthers and doomsayers get wrong year after year after year, no matter if their doomsday is caused by a new ice age, a population explosion, rabid consumerism or AI. They miss the second order beneficial effects of stronger growth and new innovation and technology.

In my article the Hummingbird and the Poison Tree, and my upcoming book of the same name, I wrote about the characteristics that mark a healthy, growing system and unhealthy, decaying systems. Remarkably they're largely the same characteristics whether we're talking about a system of two, a marriage or a friendship, a larger system like a company, or a mega-system like a nation state.

The short version is that the **Hummingbird Effect** is a positive reinforcement loop of *beneficial evolution and a rise in second order positive effects*. Better economics and living standards lead to a positive rise in happiness, technological innovation and artistic expression. In others words, good begets good.



The **Poison Tree Effect** is its dark doppelganger.

It came out of phrase I coined years ago: "Poison trees make poison fruit," or just "Poison tree, poison fruit." Sometimes a system is resilient enough to have poison flowers and poison trees in the ecosystem. There are enough beneficial plants to keep the parasitic plants at the fringes, doing light damage but never taking down the entire system.

But sometimes those poison trees spread, choking out the rest of the forest, their seeds floating away on the wind and infecting distant ecosystems and their fruit killing off the animals and insects that eat it and causing a chain reaction of decay. Too many poison trees and a system collapses.

Both of these ideas link up neatly with another idea that comes from Malcolm Gladwell: The Tipping Point.

That's a point when ideas and events in a system hit critical mass the system surges up or down dramatically in a way that's virtually unstoppable. Once the printing press takes off, its power ripples out into the world and society undergoes tremendously positive changes, with literacy rising, knowledge spreading and advances in science and medicine taking hold, while the darkness of the middle ages starts to recede.

If you focus on degrowth, class warfare, protectionism, immigrants "stealing all the jobs", you create a lethal combination of almost inevitable failure for your future.

On the whole, if there are more positive characteristics, then a system is much more likely to keep trending in the right direction and you can ride the tide to prosperity and joy. Things become a self-fulfilling positive prophecy.

**The Hummingbird and the Poison Tree and the Tipping Point** don't just apply to the evolution of technology but to the evolution of ideas. They point to the deep interconnectedness of everything from ideas, to attitudes, to balances and imbalances in a society. A society that doesn't invest in the future and doesn't believe there can be a better tomorrow digs its own grave and ensures that's exactly what happens.

But how do we get to a world with an explosion of positive first and second order effects and avoid a downward spiral?

## Getting Back to the Future

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The key to a better tomorrow is laying the groundwork for a society that flourishes and grows is to invest in the long term.

When we have the right policies and foundation in place, we don't know exactly what will come out of the magic box of ideas and innovation, we just know it will have wildly beneficial effects for a huge swath of people across society. Not every policy or technology will work for everyone, in every way, as that's impossible, but the more good policies we have in place the more we see a broadly beneficial overlap of prosperity across class, race and creed.

To have a healthy, growing society, you want to foster the characteristics of a hummingbird society with a strong foundational framework of policies and ideas.

That framework is what gives us the best chance of a brighter future.

So let's look at seven policies that can help us accelerate America and turn it into a bright, shining light for the world.

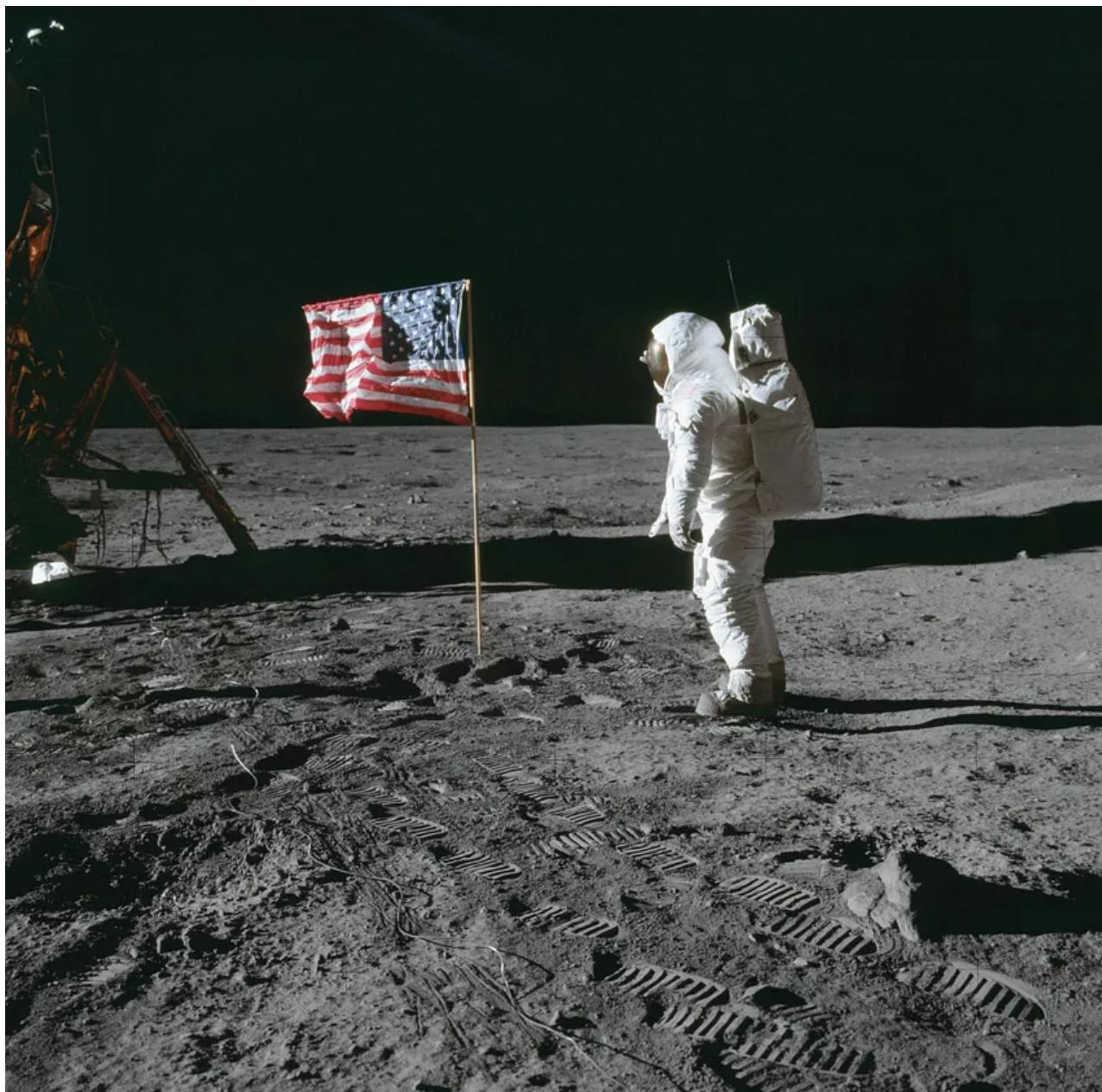
### 1. DARPA and the Operation Warp Speed model everywhere.

Let's start with start with a DARPA style initiatives for everything. Energy. Agriculture. Nanotech. AI. Biosciences.

To create the future you have to invest in the future at the public and private level.

While many people today look at government as an inefficient mess and business as the gold standard for innovation and leadership, that's only half the story. It's true that business is more dynamic and makes industries more scalable and repeatable but it's often government that's been the early driver of ideas when they're too risky or too early to justify the cost of R&D. Think of NASA and the moon landing, the Human Genome

Project and DARPA, which helped usher in technologies like "Moderna's COVID-19 vaccine ... weather satellites, GPS, drones, stealth technology, voice interfaces, the personal computer and the internet," writes the Economist.



Business can rarely spend the time or money on moonshot projects unless they're already an effective monopoly like AT&T and the 1950s, which spawned Bell Labs and its long term thinking, or Google and DeepMind in the modern era.

In other words, you need to have a massive war chest and an insanely mature and profitable business somewhere else to spend on such long term vision. That's often where the government has stepped in over the years. The vast majority of federal funding, which is now badly under siege, is used for basic research and discovery while

R&D in the private sector focuses on making things smaller, better, more repeatable and scaling the commercialization of existing, working products. Both government and business are essential pieces of the puzzle.

As Pethokoukis writes in the Conservative Futurist: "At the height of the 1960s Space Race, the United States spent nearly 3 percent of its economy on scientific and technological research and development. Of that total, about 2 percent was government funding and 1 percent business funding. Today, the United States spends just over 3 percent on scientific and technological R&D with a bit more than 2 percent conducted by business and about 0.75 percent by government. (All the various spending bills passed during the first half of the Biden administration—the Bipartisan Infrastructure Act, the CHIPS and Science Act, the Inflation Reduction Act—didn't change federal R&D investment that much.)"

In other words, the government has dropped the ball and isn't spending enough and it hasn't been for a long time. The latest administration's attacks on universities and foreign researchers threatens to make it even worse.

The only recent example of rapid spending and progress at the government level was Operation Warp Speed, one of the most incredibly successful technological acceleration projects in history, that has the dubious distinction of being largely disavowed by both the left and the right, the left because it came under Trump's first administration and the right because of the base's sudden aversion to vaccines. But Operation Warp Speed was massively successful. It saw the US deliver a vaccine in 9 months and reach 40% coverage in the first year, instead of a decade.

As Klein and Thompson write in *Abundance*: "Operation Warp Speed is the oddest political orphan. A program named after Star Trek has disappeared into its own kind of black hole. A policy that stimulated the economy more than the Apollo program, and which may have saved more lives than the Manhattan Project, has almost no loud champions in politics. Even its scarce champions seem intent on taking the wrong lessons from its success.

"In an essay for the Wall Street Journal, the University of Chicago professor Casey B. Mulligan, who had served as chief economist for the Trump White House, claimed that 'the urgent lesson' from Operation Warp Speed was that 'too much government hinders private innovation.'"

"The right lesson from World War II and Warp Speed is that the state is no enemy of invention or innovation. In fact, the government can accelerate both. In the 1940s, the Office of Scientific and Research Development mapped out the chemistry and production challenges for penicillin and turned an obstacle course into a glide path. In 2020, the US government similarly identified the bottlenecks to rapid vaccine development and removed them. In both cases, the government served as a chief national problem solver, molding its policies to fit the moment. It is a vision of a new kind of entrepreneurial state. It is the government as a bottleneck detective."

Or as Pethokoukis writes in *the Conservative Futurist*: "America was the first nation to roll out a vaccine. And it did so rapidly, getting the COVID-19 vaccine to the American people in less than ten months. And it wasn't just a single vaccine. Operation Warp Speed delivered three in record time. What's more, there's something in its success for everybody. It was an acknowledgment that drug companies had lost money during previous public health emergencies, such as the 2014 Ebola outbreaks, when treatments they developed turned out to be unnecessary. But now we needed those companies to make numerous big and bold—and risky—bets. So Operation Warp Speed placed orders for vaccines and therapies while still undergoing clinical trials, regardless of the outcomes. This encouraged pharmaceutical companies to expand manufacturing capacity so vaccines and therapies were ready to be distributed once they had the FDA's green light. There you had it: the private sector innovating with the public sector providing a safety net. The success of Operation Warp Speed also showed the overall strength of the American Innovation System."

We need more DARPA and more Warp Speed, more sci-fi inspired thinking and we need it now.

DARPA is one of the most successful government agencies of all time. Its success comes from its unique approach to funding and managing research, focusing on high-risk, high-reward projects and fostering a culture of innovation. Its flat structure, rapid project

turnover, flexible contracting, and the ability to attract and retain top talent through a unique combination of autonomy and accountability, mirrors the best of Silicon Valley on the 1990s internet innovators.



DARPA's small, flat organizational structure, with frequent program manager and director changes, enables rapid idea generation and adaptation. The short project durations (typically 3-5 years) and lack of renewals encourage a focus on delivering tangible results within a defined timeframe. It also has the flexibility to issue various types of contracts and grants and hire talent fast, often at higher salaries than typical government employees, to attract and retain top-tier expertise. It also prioritizes projects that push the boundaries of science and technology, even if the chances of success aren't guaranteed. That means when those technologies work the breakthrough is massive and beyond anything that might come out of the paper pushing and risk averse research community.

We need to replicate this approach to all aspects of the economy, everything from semiconductors, to energy, to agriculture, to nanotech, to travel and communication. Everything. Wherever a DARPA model can be used it should be used right now.

To build the future first you have to do the basic research that provides the building blocks for the innovators of tomorrow.

We don't know what that breakthrough will be that provides the catalyst to some starry eyed innovator years later, but if we don't do the research in the first place that leads to glasses, then we never get the microscope, and if we don't get the microscope we don't get germ theory and we don't get modern medicine.

Everything follows everything else in a great chain of progress.

## 2. Slash Regulation and Build Stuff. *Make regulation targeted and streamlined.*

*Put less people in the way.*

On the left and the right people are waking up to the glut of zoning regulations preventing people from building new housing and apartments to the absurdly long wait times to get approval to build anything, whether that is a bullet train or a new nuclear energy stations.

As Nolan Gray writes in the [Atlantic](#): "Until recently, zoning was a sleepy backwater in the policy world...If a layperson knew anything about zoning, chances are she didn't have an opinion about it..."

"A decade of urban upheaval has changed all of that. Amid ongoing crises of housing affordability, inequality, segregation, and sprawl, fixing zoning has emerged as a cause célèbre. Over the past decade, the Obama, Trump, and Biden administrations have all vowed to take on zoning reform. National outlets now regularly decry the evils of zoning. And local YIMBY groups across the country are rewriting old ordinances. For the first time in 100 years, the arbitrary lines that divide up the American city have become impossible for the average person to ignore.

"In 2021 alone, home prices rose by nearly 20 percent. Over the same period, rents also skyrocketed, prompting fears of a surge in homelessness. Once contained to the coasts, the crisis is spreading inland; home prices in previously affordable cities have hit record highs...Boring though it may be, zoning has real-world effects that are dire. Between mandating parking garages and banning apartments, it has made infill development prohibitively difficult in many American cities. And in suburbs across the country, it has made the starter homes we so desperately need—think townhouses and homes on small lots—effectively illegal to build."

This isn't just a problem in America but all over the world. We're not building enough homes. This results in ridiculous policies like we see in Spain, where the Spanish government attacks AirBnB and tells it to yank 65,000 listings while the president vows a 100% tax on foreign buyers. None of that builds a single new home for anyone. Landlords simply skirt the rules and rent it to the highest bidder.

But sound, sane policies rarely seem to get the right traction. Instead, insane, ineffective policies abound around the world and in America.

There's only one way to make prices go down:

Increase supply to meet demand. Economics 101.

Only building will fix the problem. If tomorrow, Spain passed a law that let every building owner add one new floor in its major cities and streamlined the permits and gave builders a ten year tax break on the build out, the housing problem would be solved virtually overnight. If America slashed the red tape and the impact studies and the constant approval and permits to do anything, the problem would fix itself.

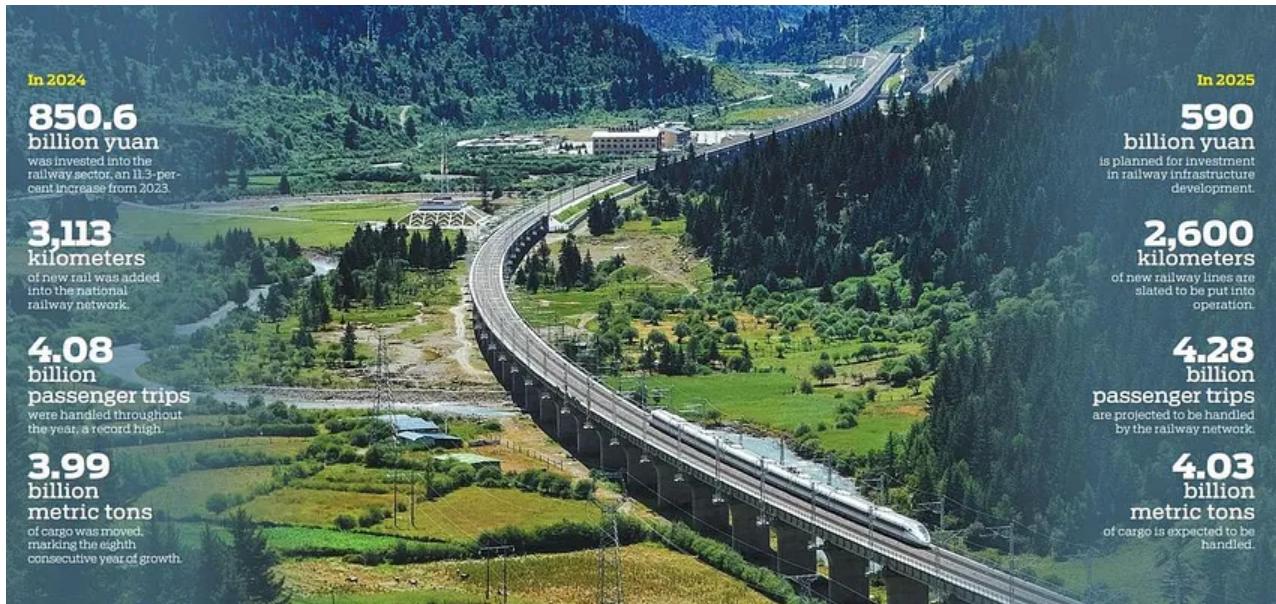
We've got to clear the way and make it affordable to build again so that builders don't have to file plans three times, see their costs skyrocket and their times to build on the land the own slowed to a crawl.

Or as Pethokoukis writes in *the Conservative Futurist*: "Economists Chang-Tai Hsieh and Enrico Moretti find that the "creeping web of these regulations has smothered wage and gross domestic product growth in American cities by a stunning 50 percent over the past 50 years." Let's say just three high-productivity cities—New York, San Jose, and San Francisco—changed their housing rules to the level of restrictiveness of the median U.S. city. The net effect of this increased density would be a 4 percent increase in U.S. GDP and an additional \$4,000 in average earnings for all American workers. Regulation costs in home building are 11 percent higher today than five years ago, accounting for \$94,000 of the final price of the average new single-family home. Over the past decade, regulation costs have increased by 44 percent."

But it's not just zoning laws. The 1970s National Environmental Policy Act had a lot of good ideas but a lot of bad second order effects. Everyone loves clean air and clean water but there's now little doubt that this tiny piece of legislation has made it incredibly cost prohibitive to build just about anything that we really need from energy infrastructure to bullet trains. The chances of repealing NEPA are basically zero but we should be looking to streamline its impact which has reached absurd proportions.

On average, the [Conservative Coalition for Climate Improvements](#), found that NEPA's environmental review process [adds about \\$4.2 million](#) to complete a single review and takes 4.5 years. Analysis from the American Action Forum found that "148 energy and transit projects in NEPA review were estimated to cost \$229 billion." Some estimates suggest that federal regulations, including those related to NEPA, can balloon a new energy or infrastructure project's by up to 20%.

Right now, China's entrepreneurs and its government is [investing \\$590 billion yuan \(81B USD\) in new trains](#), laid 48,000 kilometers of bullet train tracks, see 4.08 billion passengers ride the rails, and moved 3.99 metric tons of cargo.



Meanwhile in California, a single bullet train is expected to cost \$88-\$129 billion dollars and environmental laws have made building a single bullet train nearly impossible. The project has to comply with both state (CEQA) and federal (NEPA) environmental regulations, requiring thorough environmental assessments and mitigation measures. It's already undergone extensive environmental reviews to assess potential impacts on air quality, water resources, wildlife habitats, and other environmental factors. These reviews are documented in Environmental Impact Report/Environmental Impact Statement (EIR/EIS) documents, which are released for public review and comment. Opponents of the project have filed numerous lawsuits, challenging the environmental clearances and claiming violations of environmental laws. Some of these lawsuits have been successful in delaying the project or requiring *more* environmental reviews and wrapping it up in a nasty tangle of red tape.

The only way to fix this is to strip back these laws and streamline them. We've got to limit the lawfare industry that makes money suing the state to keep trains locked up in a massive kafkaesque nightmare of legal battles.

To do that we need a more practical and modern environmental movement, one that's less about singing songs and protesting nuclear and more about more nuclear and more targeted legislation in the places that matter and less regulation in the places where laws screw everything up.

We're already starting to see a more pragmatic and practical environmental movement. California is already reworking its CEQA bill to let people build more easily in a win for YIMBY advocates. The bill has been one of the biggest barriers in the blue state to building anything from trains to housing for years.

We don't need an environmental movement focused on degrowth, turning off lights and singing songs on acid in the desert, we need one that sees technology like batteries, nuclear and solar as the wave of the future. Technological solutions like better energy and less regulation that speeds technological progress and gives us the tools we need to make a greener and more prosperous tomorrow. Climate change is a clean energy problem not a problem of rabid super consumers and meat eaters.

More solar. More nuclear. More wind. More batteries. Not just some of it. All of it. Faster.

We beat the climate crisis with big technology not wishful thinking.

### **3. More immigration, not less. More trade, not less.**

Let's turn to trade now. We've seen a massive surge in Peron style protectionism and protectionism has never led to anything good in any country on Earth.

Trade barriers do nothing but make things more expensive for people right here at home. They're taxes. Other countries do not pay them. We do. You and me. Our small and big businesses. We pay them. Simple as that, simple math. There is no logic that says making things more expensive for people makes them richer or better off in any way whatsoever. We do not make life more cost effective for working Americans by making it more expensive to buy iPhones and groceries.

In the first Trump administration we saw tariffs as high as 19.3% on goods from China, which were kept in place by the Biden administration, and now they've rocketed to 30% and they're just as high elsewhere, leading to a crisis and dramatic drops in shipments and suffering small businesses.

This is a disaster in the making, threatening to destroy the more powerful economy in the world with a self inflicted gunshot wound. We need to go in the opposite direction and get back to basics.

The Peterson Institute for International Economics found that the payoff to America for world trade from 1950 to 2022 was 2.6 trillion USD and lifted GDP by 10%.

They write "the reintroduction of the Smoot-Hawley tariff regime causes GDP to decline by 2.4 percent. The introduction of reciprocal tariff regimes by US trading partners further contracts the US economy by 2.1 percent. In all, the Bradford and Lawrence simulations indicate that the US economy is 4.5 percent larger due to sharply lower worldwide tariff barriers since 1947. This equates to \$500 billion in 2003. The calculated decrease of \$500 billion in US GDP illustrates the impact of a shock back to 1930s-style protectionism rather than a parallel universe without liberalization over the past 50 years."

They found that the elimination of all barriers "would raise US GDP by about 4.1 percent. Scaled to 2003, this amounts to an *additional* \$450 billion in US GDP, \$1,500 per capita, or \$4,000 income increase per household annually."

Those numbers would be significantly higher today around \$785 billion in USD in additional revenue. It does not work the other way and it never will, even with magical thinking.

Even worse than keeping foreign goods out of the country is keeping skilled people out.

Making it so the best and brightest don't want to come here and study and work anymore is a disaster that makes the California bullet train look like a success by contrast. When we don't have a bullet train we can still fly. But when we don't have the best and brightest coming here that means they don't start new businesses, or staff the R&D departments of our biggest and best companies.

An [MIT study found](#) that immigrants were about 80% more likely to start a company and that "'Immigrants found more firms in every bucket...They create more firms, they create more small firms, they create more medium-size firms, they create more large firms.' He adds: 'It's not the case that [immigrants] only create growth-oriented startups. It's not the case they just create subsistence businesses. They create all kinds of businesses, and they create a lot of them."

[Julia Yoon](#) in an article for the Center for Strategic and International Studies, writes that "According to the National Science Foundation (NSF)'s 2024 [Indicators Report](#) on the state of U.S. science and engineering (S&E), foreign-born workers comprise approximately 19 percent of the overall U.S. STEM workforce in 2021, inclusive of citizens and non-citizens. However, among the U.S.'s most highly educated STEM workforce cohort, foreign-born representation is dramatically higher, with nearly 60 percent of doctorate-level computer and mathematical scientists (58 percent) and doctorate-level engineers employed across all S&E fields (56 percent) in the U.S. are foreign-born."

48% of all Fortune 500 companies have an immigrant founder.

When we see America at the Olympics winning metal after metal, take a close look at the people standing on that podium and you'll see a lot people who came here for a better life. Why can't any other country win as many metals, even China with a population that's 4.3 times the size? When you're the place that people want to send their children for a better life, you've got a massive advantage in everything from sports to the sciences to business because the best of the best come to play and work for your team.

Highly skilled education is a super power and one we can't take lightly or set on fire so that nobody wants to come here to work. When we send home a promising machine learning researcher over a [fishing license violation and speeding tickets](#) we're squandering that superpower and making it more likely that tomorrow's brilliant kids go somewhere else to build a better tomorrow.

Everyone here, other than Native Americans, was the son or daughter of an immigrant at some point in their history. We're a nation built from immigration and people who came across the seas to build a better life. We'd do well to remember it going into the next

century or we'll wind up as a superpower of the past, instead of a superpower of the future.

#### **4. School. Trades. Cooking. Shop. Engineering. Science that's fun. Critical Thinking.**

Every teacher I talk to talks about teaching to the test. Common core is a mess. The joy of school is gone. We don't do real science experiments in schools, we read about them. We memorize facts instead of teaching kids to think. The students hate it. The teachers hate it.

Why are we still doing it?

Who the hell knows.

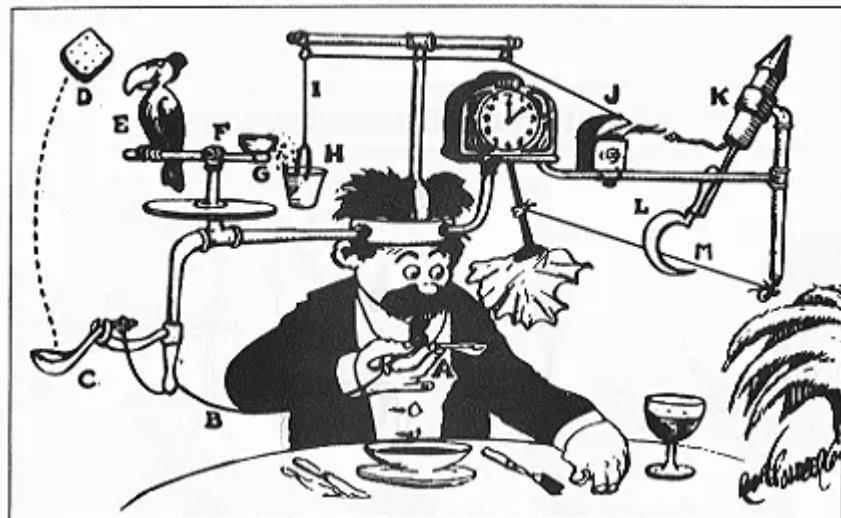
Sunken cost fallacy?

It seemed like a good idea at the time, as we tried to emulate Asia and get more kids doing well on tests. They're doing worse and that's because the joy is gone.

Everyone remembers that one great teacher they had that changed their life, that made them care about what they were learning, that made them connect the knowledge to the real world. We need more of those teachers and more of the kinds of freedom they had to make education great for everyone who had the good fortune to pass through their classroom.

At a recent family reunion, I met a teacher friend of one of my cousins. He told me with pride how he used to have the kids build Rube Goldberg machines as an experiment in thinking and creativity and how years later he still got letters or praise from kids who'd gone on to be engineers or scientists. He'd run into a former student and he/she'd say "are you still doing that Rube Goldberg machine?" and he'd shake his head sadly and say no, the school squashed it.

## Self-Operating Napkin



Hands on classes are the future. Learn by doing, the old fashioned way works. Science is where experiments actually happen instead of just reading about it in a dry text book. Get the phones out of the classroom. Kids can browse TikTok and message their friends later. Ditch common core. Every single teacher I've ever talked to about it, hates it as utter nonsense that did nothing to make kids brighter or more adaptable.

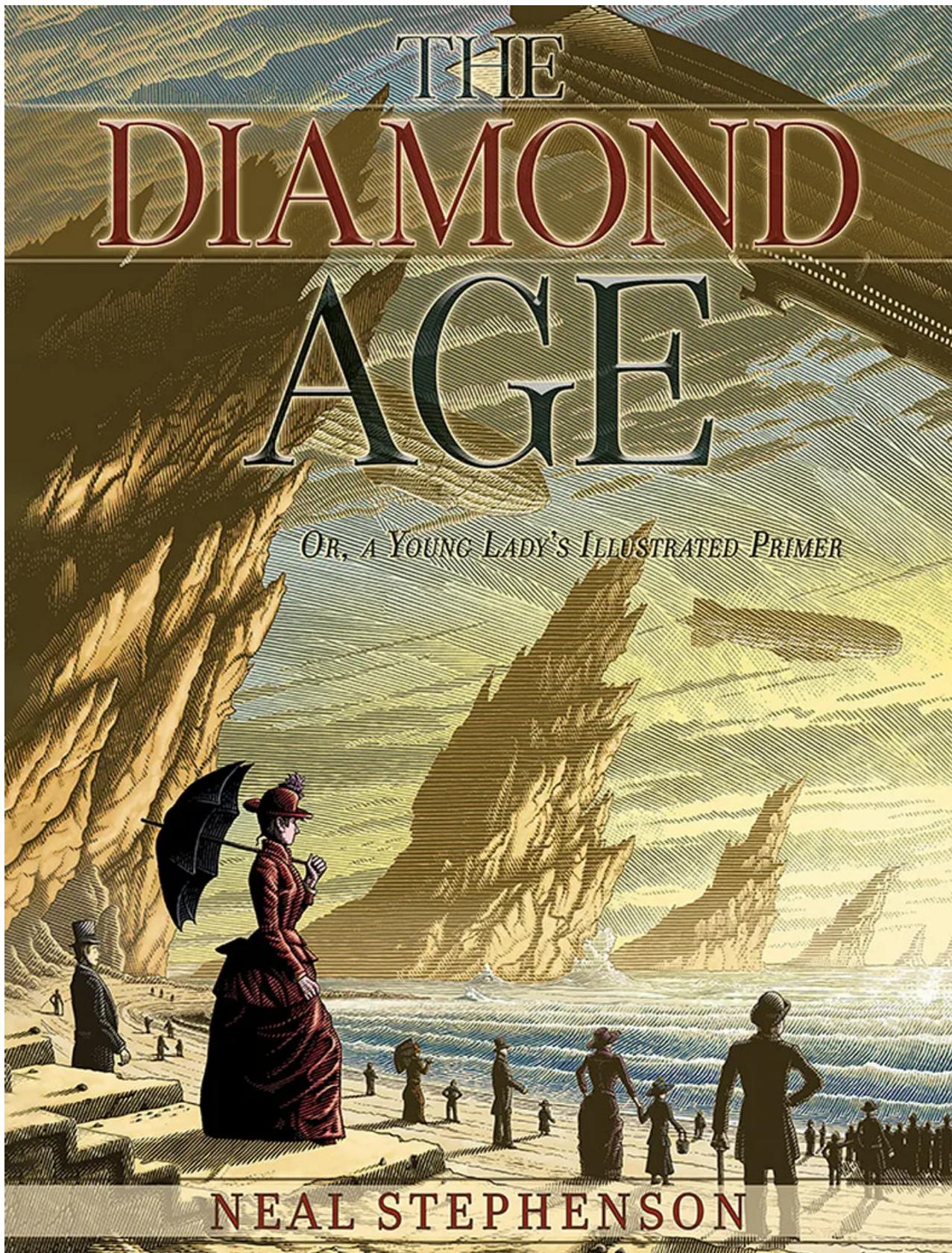
But it's not just about science, we've forgotten the real world in school.

My grandmother learned how to balance a checkbook and do her taxes in school. She learned how to cook. My grandfather had shop and sports. We've forgotten the hands-on lessons of life. If you want to be healthy, you better learn to cook, or you'll be eating 10X the salt and fat in restaurants. Is it any wonder so many people are obese?

If you want to understand math, make that math practical. If you want to know how to fix things in the real world, you've got to get your hands dirty. We need blue collar workers as much as white collar workers. Not everyone is meant to start a company or work in an office. If kids never learn to cook or build things then we miss out on many of the kinds of skills we need for the jobs of tomorrow or just good life skills like making your own healthy meals.

And teach kids about the people that matter. Ditch dry, boring, horrible text books that are subject to lobbying and political activism. Teach kids about how the tea kettle got made and the skyscraper, or who discovered DNA and who built the microscope and less about Hitler and politicians down through the ages.

While we're at it, give every kid a personal AI right out of the The Diamond Age. Short bursts of individual tutoring make a big difference, but we can't scale it right now. AI will change all that. It's already quietly impacting schools and the smartest kids and teachers already embrace them instead of fearing and fighting it.



More than anything we need schools that teach kids to think. Many of our problems today come from the fact that people who made those policies and decisions never learned to think clearly. If you've never learned to think you're bound to come up with stupid ideas. My greatest teacher in school taught me that critical thinking is the most essential skill in

all of life and it's never failed me, allowing me to adapt to changing economic environments, learning new jobs on the fly by trying and failing and getting back up and trying again, and just by figuring things out on my own.

Critical thinking. The arts. Music. Everything matters. A great teacher once said "education is what you're exposed to." Today we expose kids to a boring slop of memorized facts and we're ripped the learning out of education, the excitement, the joy and the fun.

Of course, not all learning is fun. Not all learning is excitement. But when you have none of it, you've set back an entire generation of people won't be able to power next wave of American greatness.

## 5. Manufacturing

You learn by doing and that's what the Chinese have been doing with manufacturing since the 1980s after the 1990s.

People don't go to China because it's cheap. They go because they have the most advanced manufacturing in the world. China long ago stopped being the cheap place to build stuff. That's Vietnam and other places now.

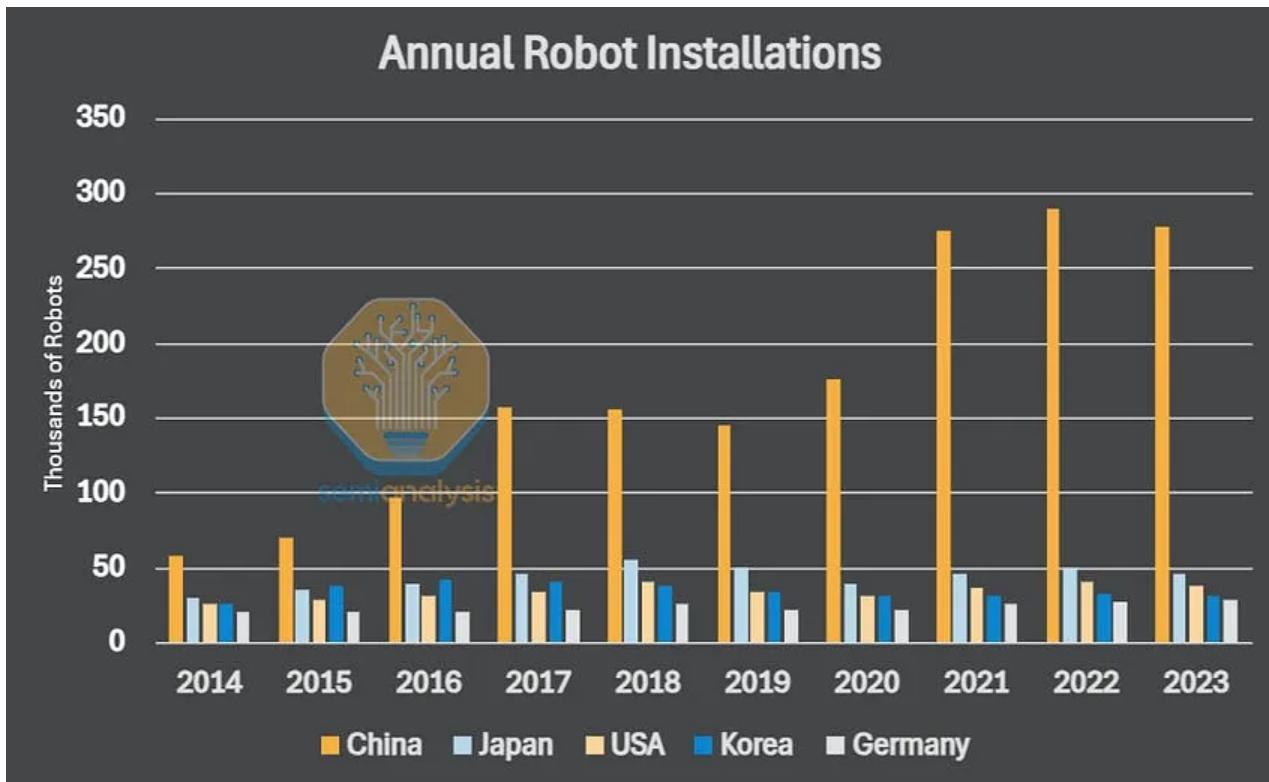
Tim Cook, CEO of Apple, said that "there's a confusion about China...the popular conception is that companies come to China because of low labor costs. I'm not sure what part of China they go to but the truth is that China stopped being the low labor cost country many years ago and that is not the reason to come to China from a supply point of view. The reason is because of the skill and the quantity of skill in one location and the type of skill it is...the products that we build require really advanced tooling and the precision that you have to have in tooling and working with the materials that we do are state of the art. And the tooling skill is very deep here. In the US you could have a meeting of tool engineers and I'm not sure we could fill the room. In China you could fill multiple football fields."

We are not going to bring back American manufacturing with tariffs and the kinds of manufacturing that we need is not the manufacturing that we saw in the 1950s. The Chinese saw that as a dead end and wisely invested in robotics. We haven't.

As I wrote in my article on [Why We Need An American DeepSeek:](#)

In a brutal wake up call to the west called [America is Missing the New Labor Economy](#), SemiAnalysis shows that America and the EU are badly behind on roboticization and the race to general purpose robotics.

When it comes to the sheer number of robots deployed in Chinese factories, nobody else in the world is even close. Take a look at that chart below. Even an idiot can see who is winning that race.



(Source: [SemiAnalysis](#))

The authors paint a dire picture for the west:

"This is a Call for Action for the United States of America and the West. We are in the early precipice of a nonlinear transformation in industrial society, but the bedrock the US is standing on is shaky. Automation and robotics is currently undergoing a revolution that will enable full-scale automation of all manufacturing and mission-critical industries. These intelligent robotics systems will be the first ever additional industrial piece that is not supplemental but fully additive - 24/7 labor with higher throughput than any human—, allowing for massive expansion in production capacities past adding another human unit of work.

"The only country that is positioned to capture this level of automation is currently China, and should China achieve it without the US following suit, the production expansion will be granted only to China, posing an existential threat to the US as it is outcompeted in all capacities.

Robotics is about to explode across the economy and make the past industrial revolutions look tiny by comparison. Picture factories churning out robots that build still more robots. Each iteration cuts costs, boosts quality, and powers a production flywheel that keeps spinning ad infinitum—leaving rivals more and more desperate and breathless as they sprint to catch up but find out its hopeless.

Because robotics is a true general-purpose technology, it will upend everything from textiles and electronics to consumer goods.

Meanwhile, the West is about to get caught flat footed as the unexpected punch smashes into our face. Here's a fully automated factory in China cranking out the components for a thousand missiles a day 24/7. Meanwhile American factories are still producing missiles like its 1945, by throwing people at it. A Pentagon war simulation said the US runs out of missiles "in days" in a war with China because it can't match China's production capacity. Europe's industrial core is getting devoured by China's relentless rise and its absolute inability to source enough power (while shutting down their nuclear reactors), and the US keeps fixating on other markets while banking on cheap offshore production.

*To fix American manufacturing we've got to think in ten year plans.*

If we want to rebuild our manufacturing we need wise, *ten* year thinking. Ten year 5% tax rate for all factory builders foreign and domestic. Cheap loans. Streamlined exceptions to environmental impact studies and streamlined permits. The Asian countries do this best. Right now the country most poised to dominate semiconductor manufacturing after Taiwan, is South Korea, not the US.

Samsung currently operates four advanced semiconductor fabs in South Korea focused on cutting-edge nodes (4nm, 3nm, and 2nm), with additional facilities under construction. They are behind in total capacity versus TSMC for now. TSMC retains a significant lead in total wafer production capacity, but Samsung is aggressively expanding to close the gap with a combination of national and private funding. Samsung is gunning to be the top manufacturer in the world and they're working on the Yongin Mega Cluster (1) (2), six fabs capable of 2nm and below, part of a \$471 billion national project with Samsung and other firms, first phase operational by 2030. The goal is 7.7 million wafers per month starting in 2030.

It's important to understand that chip production is not really a pure private endeavor. For mega-scale chip manufacturing to work, it's always been a potent combination of government and private industry. Governments often invest massively, clear regulatory hurdles and give sweetheart tax breaks to own this lucrative industry. This is true in both South Korea and Taiwan and throughout Asia, a style of business that's not natural to US industry outside of the 1950s when government was more tightly in step with business after the war.

Take TSMC and its origin story for instance: "Alongside generous tax benefits, the Taiwanese government, through the National Development Fund, Executive Yuan, provided another 48 percent of the startup capital for TSMC, and the rest of the capital was raised from several of the island's wealthiest families, who owned firms that specialized in plastics, textiles, and chemicals. These wealthy Taiwanese were directly 'asked' by the government to invest. 'What generally happened was that one of the ministers in the government would call a businessman in Taiwan,' Chang explained, 'to get him to invest.' From day one, TSMC was not really a private business: it was a project of the Taiwanese state."

There's more. When "K.T. Li (李國鼎), known as the "father of Taiwan's economic miracle," convinced Taiwanese-American Morris Chang (張忠謀) to move back to Taiwan and help build up Taiwan's semiconductor industry. When Chang founded TSMC in 1987, he did so with \$100 million in seed money from the Taiwanese government."<sup>(1)</sup>

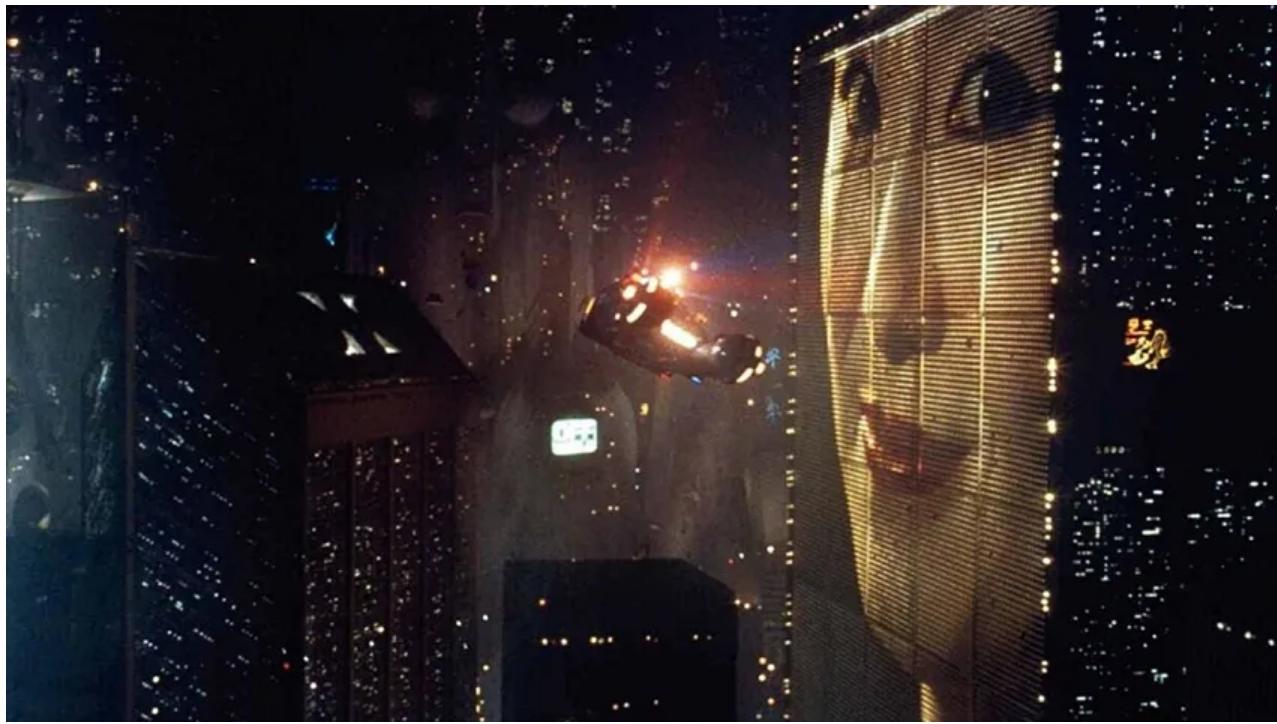
TSMC benefits from massive tax credits and multi-year tax reduction deals. The same is true in Korea, where the new chip clusters will benefit from cleared hurdles for power plants and tax benefits for R&D and more. Expect the effective tax rate of the facilities to be roughly 0% for many years when all the numbers are actually crunched and all the credits and building costs are applied.

We need to start doing the same here. Prioritize. Incentivize. Clear roadblocks and take a ten year view of these technologies, not a ten second view. Rip it all right from the pages of the TSMC playbook where the government clears roadblocks, lowers taxes for the chip giants and greenlights new energy sources (*History of TSMC*).

To win, you have to think bigger and better, but you have to do it wisely.

## 6. Visions of a Positive Future. New school Sci-Fi.

The cyberpunk aesthetic has dominated sci-fi since the 1980s. It's not always direct but its tendrils of influence extend into everything, even outside of sci-fi. The dark, rainy future is the backdrop of a million movies and TV shows.



(Source: [Bladerunner](#))

It's old. It's tired.

We need something new, a more positive future, a more nuanced one.

People need to see science and tech solving big problems and making lives better. It's a cheap trick to make the robot go rogue, like Ultron in the Avengers. It's nothing but the big bad with a metal skin slapped on. It's easy. It requires zero thought and no understanding of technology whatsoever.

We used to have very different futures. The Star Trek universe saw us as a multiplanetary species with replicators that could print up anything we wanted and where we didn't even need money anymore because we had so much abundance. The Jetson's saw us jetting around in flying cars and working a few hours a week. In a famous scene George Jetson comes home exhausted because he had to "push the button on and off five times" at work.

That was a different time and a different way of looking at technology and the world.

It changed because our relationship to technology and society changed. The upbeat, pro-tech, abundance sci-fi of the 50s and 60s gave way to the rainy, neon soaked landscapes of the cyberpunks, where everything's falling apart and evil corporations dominate our lives.

Part of that was the rise of big business in the 1980s and just a natural, artistic reaction to golden, glowing futures. The gritty, drizzly, dark noir futures of Terminator and Bladerunner swung the pendulum in the other direction.

But it's gone too far.

Too many people have grown up with nothing but Black Mirror and Termintor and can't remember a time where technology might lead us to a future free of disease and material worries, where mRNA treatments beat cancer and self-driving cars save millions of lives because their drivers don't get distracted.

Don't get me wrong. I love a good dystopian story just like anyone. I fell in love with books like Neuromancer in college. It's gritty, streetwise world of drug dealers, displaced augmented soldiers, lowlifes, punks and hackers was a powerful antidote to the glittering and glowing golden age of sci-fi where tech was treated as if never had downside or a flaw (everything does). I sunk hundreds of hours into Cyberpunk 2077. I've read every cyberpunk classic from the early 80s and gorged on anime masterpieces like Ghost in the Shell. My first novel, the Scorpion Game, is dripping with dystopian biopunk organic cityscapes and slashing rain. I love the look and feel of a noir future and so does everyone else apparently, because it's become the tired trope of almost every movie and video game of the past forty years.

And it often gets the future right. Below is one of the latest covers of nueromancer and on the right is a military drone operator in the Ukraine war.

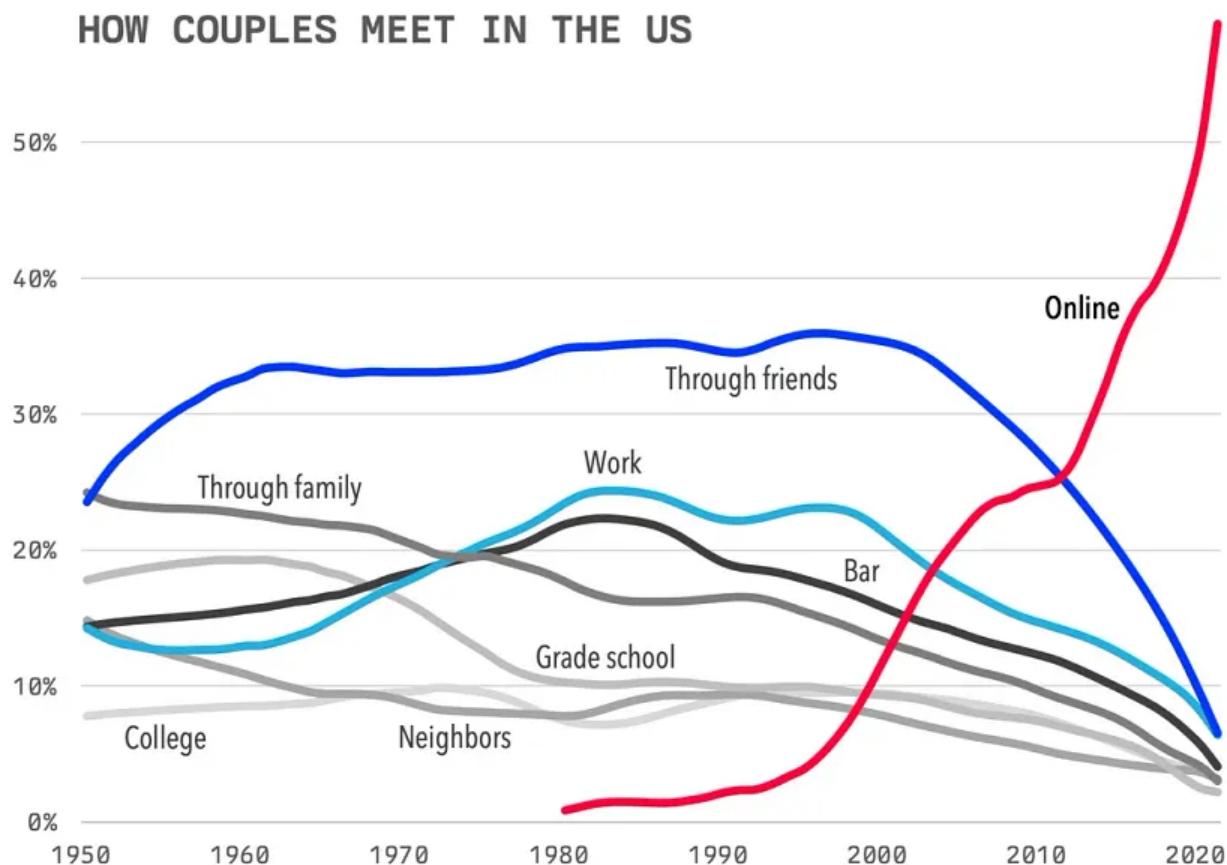


But it's only a partial slice of reality. There's something badly missing today, where we have an incredible advancement like AI predicting billions of protein folds, revolutionizing medicine, and winning its creators the Noble prize but it barely gets a mention in the news while even totally mundane and inconsequential news at OpenAI gets framed as some kind of harbinger of the rise of Terminators.

What we desperately need now is nuance.

It's easy to paint social media as an all pervasive evil in articles and shows like Black Mirror. It's a thousand times harder to paint some of its downsides in a realistic way but also show that social media has allowed billions of people to connect in new ways, make new friends, find love and share ideas. It exposes us to a wider range of viewpoints as much as it narrows our viewpoints. Both are true at the same time. I've met multiple good friends online, met the love of my life there and my story is not unique.

## HOW COUPLES MEET IN THE US



Source: "How Couples Meet and Stay Together": a longitudinal study of social life in the US by M. J. Rosenfeld, Reuben J. Thomas, and Sonia Hausen. Analysis of original survey data (n=6,519); "bars & restaurants" category cleaned to not double count couples who first met online.



Nuance is key and so is showing how tech and progress solve problems.

The great detective mystery of John Snow, hunting down the source of cholera, a dreaded scourge of a disease for centuries, is a thriller in the making. Using science, math and reasoning, he figured out one of the longest standing and most deadly mysteries in the world. The tiny water pump statue tribute to him in London isn't enough. People need stories where they see how tech and medicine and science transformed lives for the better, where technology is the solution to the evils of the world, as much as it's paradoxically the cause of some ills.

It's already happening. Books like AI 2041, take a more nuanced approach, showing the pluses and minuses of tech but painting tech in big broad, positive strokes. And shows like Murderbot, and the super popular novels that went along with it, invert the AI gone rogue trope and despite its name it's really about a robot who hacks his way free of his "governor module" and just wants to watch streaming TV and generally be left alone.

But we need more. A lot more. We need a new wave of sci-fi and stories that energize the next generation instead of demoralizing them.

## **7. Electrify the World. Batteries, Bots and Electricity.**

Batteries and personal tech are the keys to the next generation of technology. With better batteries, you get renewable fueled grids that can save their power, longer driving cars with incredible range, AR glasses that last all day instead of a few hours, drones and robots and more.

Lithium-ion batteries have already seen a steady march of tiny improvements that have dramatically improved their energy density, while their costs have plummeted. Magnets have gotten stronger and so have transistors. GaN transistors can work at much higher levels of power, like in drones in cars and boats and robots.

But right now we don't really have any major battery champions in America. The top ten are all Asian. China has the biggest, at 35% of the market, followed by Korea and Japan. We can't be content to let the rest of the world make our batteries. They're necessary for everything from our consumer electronics, to the stability of our electric grids, to powering those humanoid bots to work in factories.

In the past, the west led with the last wave of electrification, with incredible pioneers like Tesla, Westinghouse and Edison, but we take it all for granted now. Those days are long gone and today everyone from our cell phone manufacturers to our military buys their batteries from overseas.

*"A rollicking story of competitive zeal . . . delivers richly on its promise."*  
—*The Wall Street Journal*



# EMPIRES OF LIGHT

EDISON, TESLA, WESTINGHOUSE, AND  
THE RACE TO ELECTRIFY THE WORLD

JILL JONNES



Way too often, we're romanticizing the America of the past, with a bunch of people hand-assembling things in factories but those days are gone and rebuilding that won't let us compete with the highly mechanized factories of the future in Asia.

Biden pushed a big infrastructure bill with some strong goodies for electrification but the democrats did the whole country a disservice by linking batteries to the environment alone and forgetting about sovereignty and security. The Ukraine war showed the \$500 drones powered by cheap, powerful batteries, are the future of warfare and defense, not just \$2 billion dollar stealth airplanes. If you can't make the batteries and source the rare earths at home, you can't build the army of the future. So it's much bigger than a greener planet. Batteries and energy storage are deeply intertwined with reshoring manufacturing, as well as building up our robotics and EV capabilities. The rest of the world wants EVs and they want them in huge numbers and those numbers will only go up and up in the coming decades. We can't simply look backwards and remanantize the combustion engine and forget about plugging in.

As Noah Smith wrote in [a recent blog](#):

**"Whichever country dominates electrical technology will therefore rule the land and the sky** in the 21st century. AI is amazing, and yet without drones for it to command, it will not be able to win modern wars. And no matter how entertaining our online lives are, humans will still need to move themselves and their possessions around in physical space, so the auto industry will continue to be incredibly lucrative and important."

To get there we need more the DARPA approach and big incentives from congress and a bigger push in private industry. We need moonshot companies here working on the boring idea of better batteries. The Energizer Bunny is dead and we need to bring him back to life and fast.

It's not just moving about the country in cars and having a wireless PlayStation controller that lasts longer. It's about factories. Defense. Electric grids. AR Glasses. Mixed reality headsets that don't need a cord and a battery pack in your pocket. Drones. Agricultural robots.

Either we start building the electric future now or we watch someone else build it and pass us by.

## Accelerated America

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If you've made it this far it should be obvious how badly we've stagnated in the west. For too long we've let the forces of deceleration and anti-growth run riot. We got fat and lazy. We've lost our edge.

We forgot that empires are built, not inherited from the great builders of the past.

We've turned to poisonous philosophies like protectionism and populism to try to save us but those cures only make the disease spread faster. We've stagnated so badly that we don't even know how to imagine a better future. That's deadly. A society that can't imagine a better tomorrow can't build a better tomorrow.

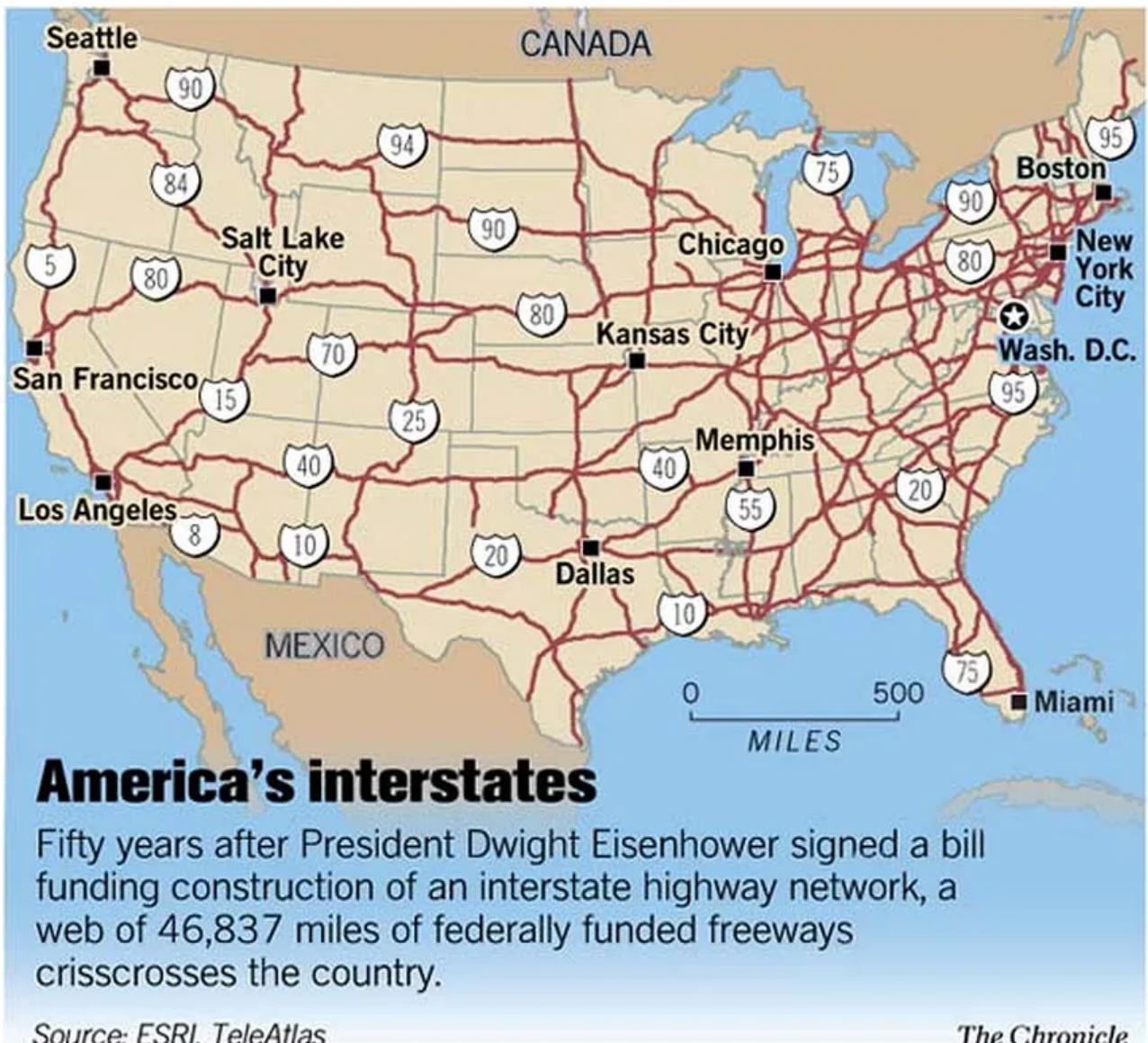
If you don't believe you can do something, it becomes a self-fulfilling prophecy. Like the old saying goes before you can do something you've got to believe it's possible. I used to think that was some hippy-dippy, new age nonsense, but as I've gotten older I realize it's literally true. If you don't think you can run a marathon, or climb a mountain, you won't start doing the training to get there and so you'll fail. It's simple math, really.

Instead of accelerating AI so we can have more AlphaFold style medical breakthroughs and self-driving cars, we're talking about stopping datacenter expansion and crippling AI with suffocating AI safety laws built on utter nonsense powered by Hollywood fantasies instead of strong engineering reality.

Instead of expanding science and pushing forward promising new cures for cancer, or HIV, or Zika, we've got populists fighting to ban or limit mRNA vaccines in a classic example of American decel idiocy.

We've strangled our ability to build houses or lay down a bullet train. Our climate laws are broken when they see a bullet train that would take thousands of passengers a day off the roads as an environmental threat.

While China builds hundreds of thousands of miles of railroads, it's become almost impossible to imagine the US building anything like the interstate freeway system that connected the country in the 1950s. Today it would get bogged down by screaming protestors, activists on Twitter, a thousand environmental impact studies and endless waves of permits and approvals and get deluged with a wave of lawsuits.



We've lost our ability to think big and build big.

Slowing down is deadly. When you have slow to stagnate growth, mold forms on the foundations of empire and poisonous philosophies and ideas and people move in to fill the void. A faster, growing economy makes people happier and gives them more choice. When your company fails you just go work for the winner or get a better job. But when you've got an economy that's just treading water every job loss hurts and leads to rising unrest and resentment and fuels a new wave of bad ideas and bad policies that makes everything worse.

To fix it we've got to battle back against the dark ideas of degrowth and the precautionary principle and the AI doomsday fanatics, as well as the anti-science, anti-tech mentality that's taken root deep in the psyche of the country and killed our ability to dream of a better tomorrow.

When you throw a wrench in the wheels of progress, bad things happen. Enemies of innovation always think they're on the side of the light by slowing things down. But they never think about the side effects, about all the good things that we miss out on when we gum up the works. What diseases will we cure with stem cell breakthroughs decades too late because we wasted eight years in the second Bush administration restricting the research based on worries about aborted fetuses?

The [National Library of Medicine](#) reports on the drastic slowdown in progress that came out of the Bush era decel policies:

"A slew of negative ramifications followed for ES cell researchers. Now facing restrictions on the type of research conducted using federal funds, some scientists were forced to create a dichotomous research environment based on federal vs. private funding of staff, equipment, and lab space. Collaboration and the sharing of knowledge between scientists also was hindered, and American researchers who previously spearheaded ES cell initiatives were no longer able to offer much of a contribution, stifling relationships with their international counterparts.

Further aggravating the situation was the fact that the 21 existing lines were not genetically or ethnically diverse, meaning specific disease processes (such as Parkinson's) could no longer be studied in ES cells. Similarly, any information gleaned from the existing lines was limited to certain ethnicities, leaving uncertainty with regard to cellular processes in minority groups. In terms of therapeutic application, all 21 lines were of decidedly poor utility as they were cultured under inferior conditions by today's standards."

This was and is sheer stupidity at every level.

What's the cost in people dying now, who could have been saved by advanced progress on stem cells earlier? What's the benefit of slowing down, except cheap political wins and appeasing people who've never solved a real problem in their life? I'll trade the hurt feelings of a bunch of religious political activists for saving the lives of children with genetic diseases any day of the week.

But there's equal share of blame to go around on both the left and the right.

You can blame the climate crisis directly on the environmentalists of the 1960s. They attacked nuclear energy and left us with ever rising emissions because of much dirtier alternatives.

Luddites always think they're saving the world. If they can just slow down, stop or break the engine of progress they can take us back to a golden age where life was simpler and everyone knew each other and everyone lived off the land. They forget that those were times of backbreaking labor and lack of choice, where half of all children died before reaching adulthood and a tiny cut could mean the end of you.



Drawn from life by an Officer

## THE LEADER OF THE LUDDITES

Pub'd May 1812 by M<sup>s</sup> Walker and Knight, Succinctly Royal Exchange.



You've got to have respect and reverence for the past. Life is not all about growth and economic wonders and new technology. Family, friends, good food, laughter and love are all the things that make life wonderful and worth living. But technology and progress mean a longer life for the ones that we love. It means we get to see our children grow up.

It means you can get on a plane and see Japan, instead of just reading about it in a book. It means that your country is safer and can defend itself and adapt to crises on the fly because every dollar is not stuck just paying for the basics.

It also doesn't mean that we never need checks and balances on technology. Seatbelt laws were good and saved a lot of lives. Before seatbelts were mandatory, you had to buy them on your own dime and most people just didn't bother. Laser focused and highly targeted legislation can work wonders.

Unfortunately, we've progressed towards bigger and more bloated bills. The Glass-Steagall Act was 37 pages. The Dodd-Frank bill that eventually replaced it was 847. It's hard to get anything big done in a world strangled by red tape that requires an army of \$3000 dollar an hour lawyers to interpret.

To build a better future, we've got to find a better balance. We don't need sci-fi that's just fawning over technology and never shows the drawbacks but we do need something much, much more than a black mirror on the world. We need clear eyes and a clear window. We need something to believe in.

If you're alive today in America, you're one of the luckiest 1% of 1% to ever live. You've lived longer, healthier, with more choices and more freedom than at almost any other time in the past. But you've also lived in a time of increasing uncertainty and instability, where the old foundations are crumbling the answers to fix it are increasingly insane and wrong.

**There's really only one answer and it frames everything you need to know when you think about the environment, laws, policies, jobs, technology and the future.**

## Build.

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